Is DOS 5.0 Really the Best? Or Is DR DOS 6.0 Better?

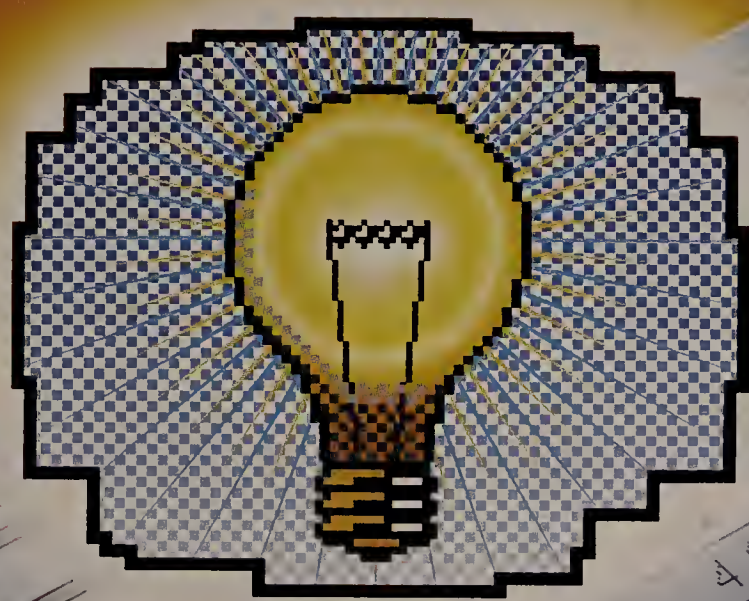
PC WORLD

APRIL 1992 $3.95

EXCEL 4.0

The First Smart Spreadsheet

- Guesses Your Next Move
- Drag and Drop
- Runs 1-2-3 Macros
- Super Button Bars



MAIL-ORDER 386s
100 Red Hot 33-MHz PCs
Starting at $1000

WINDOWS WORD PROCESSORS
6 Easy Tools for Great Documents

PERSONAL LASERS
9 Compact Printers From $600

What do you want in a monitor?

Circle 187 on reader service card

How about everything?

Last year we invested over $3.6 billion *in research and development. In fact, our investments exceed the annual revenues of most companies. No wonder we were able to design such an innovative line of monitors.*

The new MultiSync® monitors from NEC. Not an introduction. A revolution.

Announcing the new FG™ series of MultiSync monitors. Completely redesigned from the inside out to give you brighter, sharper, more accurate images. Now the monitor you've always wanted has all the features you ever wanted.

Features like our exclusive AccuColor™ Control System.* An amazing advance in computer monitors that provides unprecedented color accuracy. Now you can easily match on-screen colors to printer output, other monitors, color reference systems such as Pantone® or even your personal preferences.

Advanced flat square screen technology takes the FG series performance into the future. Larger screens combined with our FullScan™ capability provide an edge-to-edge display with up to 36% greater active screen area** than most conventional monitors. Higher refresh rates enable stable, flicker-free images. While the high-contrast screens eliminate blurring, display colors more vibrantly and deliver exceptionally sharp text and crisp graphics.

ErgoDesign™ elements enhance comfort and safety. An antistatic screen coating eliminates dust attraction. And all the controls are in the front where they're easier to use. Plus, our Reduced Magnetic Field™ technology lowers ELF and VLF emissions. In fact, they even meet the strict Swedish MPR II guidelines.

MultiSync monitors support a range of video standards from VGA to 1280 x 1024 non-interlaced, Apple Mac II and many workstation modes.

The all new FG series from NEC. For an image as clear as the one in your mind.

*Not available on the 3FGx. **Dependent on graphics board and signal timing used. ©1991 NEC Technologies, Inc. MultiSync is a registered trademark and FG, AccuColor, FullScan, Reduced Magnetic Field and ErgoDesign are trademarks of NEC Technologies, Inc. Pantone is a registered trademark of Pantone, Inc. Apple and Macintosh are registered trademarks of Apple Computer, Inc.

Because ↑ is the way you want to go. **NEC**

C&C
Computers and Communications

Call 1-800-NEC-INFO. (In Canada: 1-800-343-4418.)
For immediate information via fax, call NEC FastFacts, 1-800-366-0476. Request #1521.

APRIL 1992
VOLUME 10, NUMBER 4

PC WORLD

Personal Laser Printers
118

COVER STORIES

PREVIEW

Excel 4.0 The best *Windows* spreadsheet gets even better, thanks to a host of smart features that take the drudgery out of worksheet creation and management. **Richard Scoville** **206**

REVIEWS

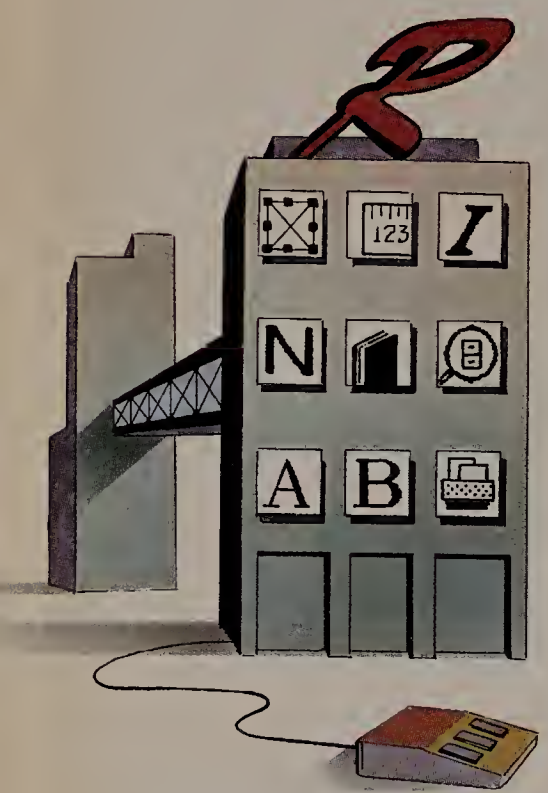
A Laser on Every Desk With prices starting at less than $1000, personal laser printers make perfect sense for the desktop. *PC World* rates nine top models that deliver crisp, professional-looking output in a hurry. **Daniel Miles Kehoe** **118**

Windows Word Processors When it comes to word processors, *Windows* is where the action is. Our reviewer torture-tests six powerhouse packages that let you learn the fundamentals fast and churn out documents like a pro. **George Campbell** **146**

FEATURES

Buyers' Guide: Mail-Order 386 Systems These days buying direct can net you a fully loaded 33-MHz 386 for less than $2000. Use our comprehensive guide to 100 systems to shop for the features you want, at a price you'll love. **John Walkenbach** **173**

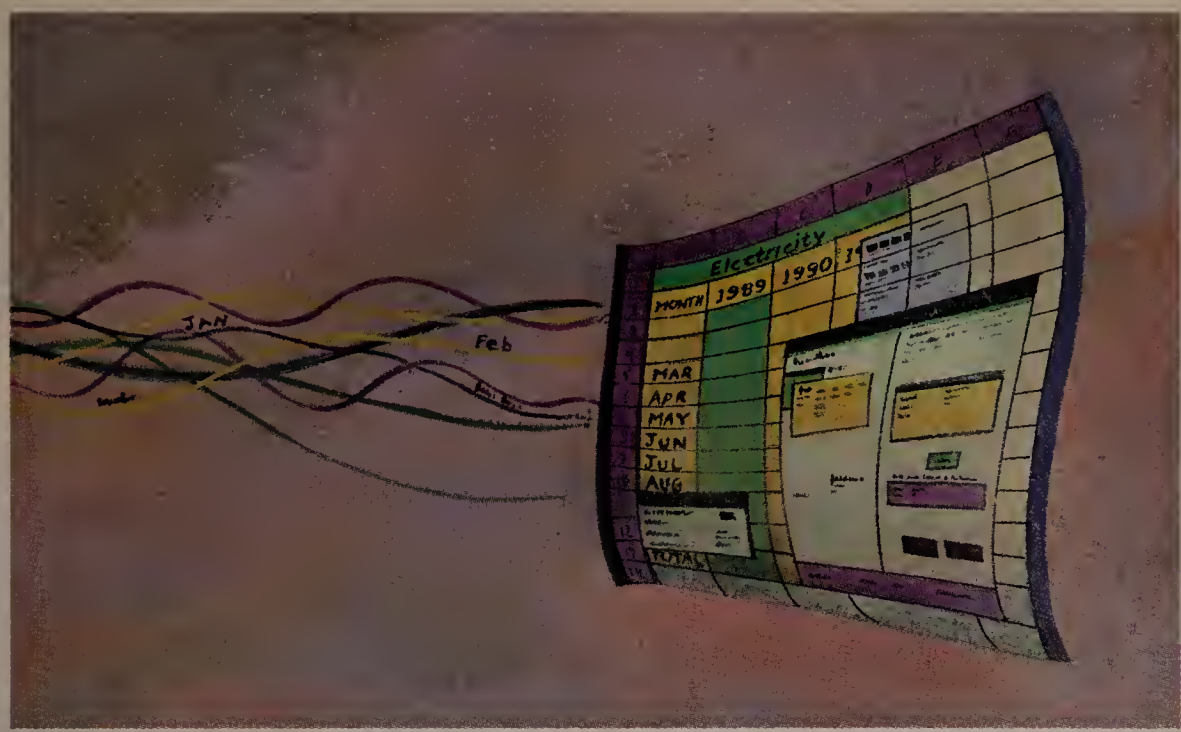
DOS vs DOS Compared with MS-DOS 5.0, DR DOS 6.0 frees more conventional memory, throws in a slew of utilities, and still costs the same. The catch? Compatibility. **Scott Spanbauer** **215**



Windows Word Processors
146

Low-Cost Scanners
188

Cover photograph by Robert Cardin
Digital composition by Varitel Select



Excel 4.0
206

INSIDE

NEWS

TOP OF THE NEWS 17

INDUSTRY OUTLOOK
Low-cost upgrades target new *Windows* users 63

Full-fledged applications exploit E-mail systems 64

EISA systems gain momentum as prices drop 66

PC WORLD MARKETPLACE
Prices for 30 popular PCs in eight markets, and more 80

PRODUCT OUTLOOK
- Compaq LTE Lite/25, Lite/20 87
- Panasonic KX-P4430 Laser Partner • Dell 486P Series 88
- Dataproducts LZR 1560
- Passport XL 90
- MastersPort 386SLe
- NEC UltraLite SL/25C 92
- *LotusWorks 3.0* 94
- *WordStar for DOS*
- *Untouchable, ViruSafe 4.5* 98
- *SuperGUI 1.4* • *DataEase Personal* 100
- *One-Write Plus Accounting Works, One-Write Retail Express* • *Adobe Illustrator 4.0 for Windows* 104
- *MailBag* • *PerForm Tracer* 106
- *WorkMan* • Central Station 110

PREVIEWS

Compaq Redefines Its PCs
Innovation and affordability mark Compaq's high-powered 25/50-MHz 486 desktops, monitors, and system upgrades. **Jeff Bertolucci** 69

Get Power Windows With HP's Enhanced NewWave 4.0
With slick file and program management, HP's graphical desktop makes *Windows* easier than ever. **Robert Lauriston** 73

Northgate's Upgradable 486SX
Thanks to a smooth CPU-and-clock upgrade scheme, Elegance ZXP systems offer low-cost entrée to future high performance.
Michael Goodwin 75

dBASE IV 1.5: Refining an Industry Standard
Mouse support, zippier performance, and other embellishments update this standby. **Mark Brownstein** 77

FEATURES

Buyers' Guide: Full-Page Scanners
Low-cost, improved OCR software makes scanners a must for everything from desktop publishing to document storage. Choose from 38 color and gray-scale models.
Patrick Marshall 188

Tips for Great Reports
Create documents that command attention and get results with these commonsense tips and rules of thumb.
Margaret Y. Rabb and Richard Scoville 224

HOW TO

The Help Screen
Matching super-VGA monitors and boards, converting *WordPerfect* files to *dBASE* data, and more. **Karl Koessel and Robert Lauriston** 35

Spreadsheets (A..Z)
Select fonts with *1-2-3*'s Wysiwyg add-in, graph a frequency analysis. **Richard Scoville** 235

Word Processing Clinic
Edit and save ASCII files in *WordPerfect, Word,* and *WordStar.* **George Campbell** 243

Data Basics
Structure a data base in *Paradox,* track elapsed time in *Alpha Four.*
Steve Cummings 251

Publishing & Presentations
Revamp your company newsletter with an uncluttered format and cohesive design.
Richard Jantz 258

Communications Q&A
Print a downloaded ZIP file fast. **Judy Heim** 263

Windows Workshop
Switch between printers within applications, recover the DOS icon prompt. **Jesse Berst and Scott Dunn** 267

User Group Tips
Hands-on advice from users across the nation 275

Star-Dot-Star
Bypass AUTOEXEC.BAT checks when rebooting, calculate loan payments.
Edited by Brett Glass 279

Instant Reference Card
The Norton Utilities 6.0, from UnErase to enhanced DOS commands 291

DEPARTMENTS

In This Issue 13
What Next? 21
Letters 27
Consumer Watch 57
The Home Office 326

INFORMATION

1991 PC World Annual Index 38
PC World Catalog 294
Advertiser Index 307
Products Featured in Editorial 311
PC World Mail-Order Shopping Guide 313

PC BRAND

Listen. It's that little voice telling you that when you purchase a PC Brand, you're not only paying a lot less than you would for most other computers, you're getting a lot more.

Like award winning customer support. We were rated #1 for service and support in a magazine evaluation of the "10 Best Mail Order Companies." That's because as long as you own a PC Brand computer, we'll always be there to help you any way we can. Take it from PC Magazine, "...PC Brand's service policy does outclass the competition."

"DING"

Our warranty is another PC Brand advantage. In addition to 100% parts and labor coverage for one full year, we offer free on-site service in your home or office if you should ever need it. You'll also have access to our technical bulletin board service. It's loaded with all kinds of news, including the latest information on your PC Brand system, as well as helpful hints from our technical staff. You're going to find that our warranty is certainly one of the most reassuring around.

Of course, there are a couple more things every PC Brand comes with. Like a 30-day, no-questions asked, money back guarantee, and unlimited toll-free technical support by phone or fax.

So you see, there's a lot more to PC Brand computers than just a great price. If you have any questions at all, or are interested in ordering, just give us a call. But before you do, it's that little voice again, telling you to look closely at the next page for some more good things we know you'd like to hear.

386/SX-16 SYSTEM

- 386SX, 16MHz Processor
- 2MB RAM
- 1.44MB, 3.5" drive
- 40MB IDE hard drive
- 16-bit SVGA, 512K
- Super VGA color monitor (1024 x 768 resolution)
- 1 parallel port/2 serial ports
- 101-key enhanced keyboard
- Serial mouse
- MS-DOS 5
- MS Windows 3.0

Lease for $48/month **$1,195**

386/SX-25 SYSTEM

- 386SX, 25MHz Processor
- 4MB RAM expandable to 32MB
- 1.44MB, 3.5" drive
- 1.2MB, 5.25" drive
- 100MB IDE, 18ms hard drive
- 16-bit SVGA, 512K
- Super VGA color monitor (1024 x 768 resolution)
- 1 parallel port/2 serial ports
- 101-key enhanced keyboard
- Serial mouse
- MS-DOS 5
- MS Windows 3.0
- **User Upgradable**

Lease for $64/month **$1,595**

486/SX-20 SYSTEM

- 486SX, 20MHz Processor
- 4MB RAM expandable to 32MB
- 1.44MB, 3.5" drive
- 1.2MB, 5.25" drive
- 100MB IDE, 18ms hard drive
- 16-bit SVGA, 512K
- Super VGA color monitor (1024 x 768 resolution)
- 1 parallel port/2 serial ports
- 101-key enhanced keyboard
- Serial mouse
- MS-DOS 5
- MS Windows 3.0
- **User Upgradable**

Lease for $80/month **$1,995**

386/33 CACHE SYSTEM

- 386, 33MHz Processor with 64K cache
- 4MB RAM expandable to 32MB
- 1.44MB, 3.5" drive
- 1.2MB, 5.25" drive
- 200MB IDE, 18ms hard drive
- 16-bit SVGA with 1MB
- Super VGA color monitor (1024 x 768 resolution)
- 1 parallel port/2 serial ports
- 101-key enhanced keyboard
- Serial mouse
- MS-DOS 5
- MS Windows 3.0
- **User Upgradable**
- **32 Bit Architecture**

Lease for $96/month **$2,395**

386/SX-25 NOTEBOOK

- 386SX, 25MHz Processor
- 2MB RAM expandable to 16MB
- 1.44MB, 3.5" drive
- 80MB IDE, 19ms hard drive*
- Paper white VGA, non-glare CCFT backlit LCD
- 640 x 480 resolution, 32 gray shades
- Supports an external VGA
- 1 parallel port/2 serial ports
- External keyboard port
- MS-DOS 5
- Leather carrying case
- 8.66" x 11" x 2.08;" 6.5 lb.

Also available with 60MB hard drive for $1,895

Lease for $80/month **$1,995**

386/SX-25 CACHE SYSTEM

- 386SX, 25MHz Processor with cache
- 4MB RAM expandable to 32MB
- 1.44MB, 3.5" drive
- 1.2MB, 5.25" drive
- 100MB IDE, 18ms hard drive
- 16-bit SVGA, 512K
- Super VGA color monitor (1024 x 768 resolution)
- 1 parallel port/2 serial ports
- 101-key enhanced keyboard
- Serial mouse
- MS-DOS 5
- MS Windows 3.0
- **User Upgradable**

Lease for $70/month **$1,745**

486/33 SYSTEM

- 486, 33MHz Processor
- 4MB RAM expandable to 32MB
- 1.44MB, 3.5" drive
- 1.2MB, 5.25" drive
- 200MB IDE, 18ms hard drive
- 16-bit SVGA with 1MB
- Super VGA color monitor (1024 x 768 resolution)
- 1 parallel port/2 serial ports
- 101-key enhanced keyboard
- Serial mouse
- MS-DOS 5
- MS Windows 3.0
- **User Upgradable**
- **32 Bit Architecture**

Lease for $112/month **$2,795**

486/33 EISA CACHE SYSTEM

- 486, 33MHz Processor
- External zero-wait state
- 64KB static RAM cache
- 8MB RAM expandable to 64MB
- 1.44MB, 3.5" drive
- 1.2MB, 5.25" drive
- 200MB IDE, 18ms hard drive
- 16-bit SVGA with 1MB
- Super VGA color monitor (1024 x 768 resolution)
- 1 parallel port/2 serial ports
- 101-key enhanced keyboard
- Serial mouse
- MS-DOS 5
- MS Windows 3.0
- Tower Case

Lease for $176/month **$4,395**

- Monthly lease rates based on length of lease.
- TRW Customer Service Division. Free one-year on-site service on desktop and tower systems is available to most locations in the United States.
- PC Brand reserves the right to amend specifications and prices without notice. All other non-PC Brand products or services are identified by the trademarks or service marks of their respective companies.

©1992 PC Brand, 405 Science Dr. Moorpark, California 93021.

- **Custom configurations available.**
- **All major credit cards, checks, money orders, direct wire and approved purchase orders accepted.**
- Sales: 7AM-9PM M-F C.S.T.
  9AM-4PM Sat. C.S.T.
- Tech Support: 7AM-8PM M-F C.S.T.
  9AM-5PM Sat. C.S.T.

PC BRAND™

CALL 1-800-PC BRAND

1-800-722-7263 FAX: 800-722-7392

WOR492

Circle 198 on reader service card

WAITING FOR
A LITTLE BELL
TO GO OFF IN YOUR HEAD,
TELLING YOU IT'S
THE BEST TIME TO BUY
A COMPUTER?

Portable Mass Storage

Battery Power!!

240MB Batt. Pwr. Hard Disk

Note the compact size of this 240MB, 2lb. fully self-contained hard drive. It will operate for 3 hours on its own internal battery and recharge with any standard AC power cord in only 90 minutes.

50240QP Hard Disk

Now you can be completely free from the AC wall outlet with plenty of hard disk storage. An exciting feature of this 50MB - 200MB drive is that it will operate on a Mac or a PC compatible or BOTH.....just as it is, NO CARDS. Just think about it..... One drive for both Mac and IBM.....

If you travel, transport data, or just want to save desk space, your options are pictured below:

85MB Hard Disk

90MB Bernoulli Cartridge

85MB Battery Power

Sony CD-ROM Drive

Floptical 20MB
(Battery Option)

2000MB Hard Disk Drive

240MB Hard Disk
(Battery Option)

1000MB Erasable Optical

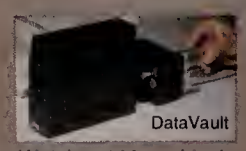
1000MB Hard Disk

400MB Solid State Drive

600MB Tape Drive

Dual 90MB Bernoulli

128MB Erasable Optical
(Removable Cartridge)



Watch out Megadrive!

88MB Syquest Cartridge

Liberty Systems

(408) 983-1127
fax (408) 243-2885

160 Saratoga Ave. Ste. 38, Santa Clara, Ca. 95051

Circle 128 on reader service card

PC WORLD

Philip Lemmons **Editor in Chief**

Eric Knorr **Editor**
Russell Glitman **Executive Editor**
Cathryn Baskin **Managing Editor**

Senior Editors
Reviews Eric Brown
Features Steve Fox
News Mike Hogan

East Coast Editor
Eric Bender

Editorial
Assistant Managing Editor Annie Kandra
Technical Editor Karl Koessel
Assistant Technical Editor Susan J. Silvius
Associate Editors Bronwyn Fryer, Roberta Furger, Michael Goodwin, Bruce Kinnaird, Lincoln Spector
Assistant Editors Jeff Bertolucci, Rex Farrance, Dan Miller, Melissa R. Riofrio, Christina Wood
Editorial Assistant Anita Hamilton

Copy Chief Richard Johnson
Senior Copy Editors Barbara Lewis, Peggy Nauts
Copy Editors Bonnie Jacobson, Marla Miyashiro
Asst. to the Editor in Chief Cynthia Grossman
Administrative Assistant John Goddard

Electronic Typographer Henry Pham

Business Manager Scott Danish

Art & Design
Art Director Mitch Shostak
Associate Art Directors Robert Kanes, Greg Silva
Senior Designer Emily Wollenweber
Senior Design Associates Barbara Adamson, Laura Pannbacker
Designer/Infographics Jeff Berlin
Asst. Designer/Infographics Hope Winslow
Production Artist Marlene Tobias

Contributing Editors
Anita Amirrezvani, Steve Bass, Jesse Berst, TJ Byers, George Campbell, Steve Cummings, Rob Garretson, Brett Glass, Judy Heim, Mark Henricks, Richard Jantz, Robert Lauriston, Robert Luhn, Martin Matthews, Richard Scoville, Ralph Soucie, Scott Spanbauer, Daniel Tynan, John Walkenbach

Founder David Bunnell
Founding Editor Andrew Fluegelman

PC World Online
Director/System Operator Jim Moody
System Operator Thomas Gewecke

User Group Advisory Board
Tony Barcellos, Sacramento PC Users Group; Steve Bass, Pasadena IBM Users Group; Roger Bender, Microcomputer Managers Association (MMA); Jack Bolton, Atlanta PC User's Group; Brian Camenker, Boston Computer Society; Mary Dolce, Chicago Computer Society; Al Harrison, Houston Area League PC Users; David Hoffman, NYPC; Brian Livingston, MMA; Joseph Rigo, NYPC; Irving Samuels, Capital PC User Group; Jerry Schneider, Association of PC User Groups

Patrick Kenealy **President & Publisher**
Richard J. Marino **Associate Publisher**

How to Contact PC World

Unless otherwise indicated below, please direct all correspondence and inquiries as follows:

Mail
PC World Editorial, 501 Second St. #600, San Francisco, CA 94107
CompuServe: 74055,412
MCI Mail: PC World Editorial
Phone: 415/243-0500
Fax: 415/442-1891

PC World Online
You can contact the editors by sending electronic mail to the PC World Online area of America Online. The area features electronic access to the latest issue of *PC World*, a data base of back issues, new product announcements, a library of software utilities and index files, and message boards and conferences. To obtain a free America Online starter kit, call 800/827-6364, ext. 5741.

Subscription Services/Address Changes
Call toll-free 800/234-3498 (303/447-9330 in Colorado), or write Subscriber Services, P.O. Box 55029, Boulder, CO 80322-5029. To place new orders, call 800/825-7595.

Letters to the Editor
PC World welcomes your comments and opinions. Address editorial correspondence to *Letters to the Editor.* Letters intended for publication should not exceed one double-spaced page. Be sure to include your name, city, and state. We reserve the right to edit all letters.

Help With Your PC Hardware or Software
If you have a problem, *PC World* may have the answer. Send questions about PC products and procedures to *The Help Screen.* Send consumer-related questions and complaints to Roberta Furger, *Consumer Watch.*

Reader Submissions
PC World encourages readers to share technical solutions. We pay $25 for each *Power Tip* published in the magazine, $50 for *User Group Tips,* $25 to $200 for *Star-Dot-Star* items, and $50 for questions used in the How To section. Keep submissions brief (*Power Tips* and *User Group Tips* to 100 words or less). We cannot acknowledge unpublished submissions; accepted submissions will be acknowledged by payment.

New Product Submissions
Send hardware and software press releases to John Goddard or call 415/978-3212.

Reprints and Permissions
You must have permission before reproducing any material from *PC World.* If you want to quote from or reprint any portion of any article or use artwork or photographs from the magazine, send a written request to *PC World,* Reprints and Permissions, 501 Second St. #600, San Francisco, CA 94107; include a phone number to ensure a fast response. To order reprints of *PC World,* call 415/978-3162.

Editorial Calendars
To receive a copy of *PC World*'s Editorial Calendar, call your nearest regional *PC World* advertising sales office. See the Advertiser Index for your region's phone number.

PC World ™(ISSN 0737-8939) is published monthly at $29.90 for one year (12 issues), $59.80 for two years (24 issues), $89.70 for three years (36 issues) by PC World Communications, Inc., 501 Second St. #600, San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with additional postage. Add $18 per year for Canada and Mexico; add $46 per year for airmail for all other countries. Canadian GST Registration #R124669680. Second-class postage paid at San Francisco and additional mailing offices. POSTMASTER: Send address changes to *PC World,* Subscription Dept., P.O. Box 55029, Boulder, CO 80322-5029. Editorial and business offices: 501 Second St. #600, San Francisco, CA 94107, 415/243-0500; CompuServe 74055,412; MCI Mail PC World Editorial. *PC World*™ is an independent journal, not affiliated in any way with International Business Machines Corporation. IBM is a registered trademark of International Business Machines Corp.

Copyright ® 1992, PC World Communications, Inc. All rights reserved. The following are trademarks of PC World Communications, Inc.: Consumer Watch, PC World View, ".", PC World.

PC WORLD

SUBSCRIBE FREE SAVE MAIL SPECIAL

FREE!

ALMOST 58%

12 ISSUES

☐ YES! I Want to save almost 58%. Send me one year (12 issues) of PC WORLD for only $19.97. I'll save 33% off the regular subscription rate, and almost 58% off the annual newsstand price. Plus I get PC WORLD'S PowerBase*•* macros/utilities disk– FREE –with my subscription.

NAME

COMPANY

ADDRESS

CITY, STATE, ZIP

Printed on Recycled Paper

CALL 1 800-825-7595 OR FAX 1 415-882-0936

Basic annual subscription price is $29.90. Savings based on annual newsstand price of $47.40. Please allow 6 to 8 weeks for delivery. Offer good only in the U.S. PowerBase*•* diskette is offered solely by PC WORLD Magazine. It should not be confused with 'power-base' which is database software offered by Compuware Corporation.

4HS80

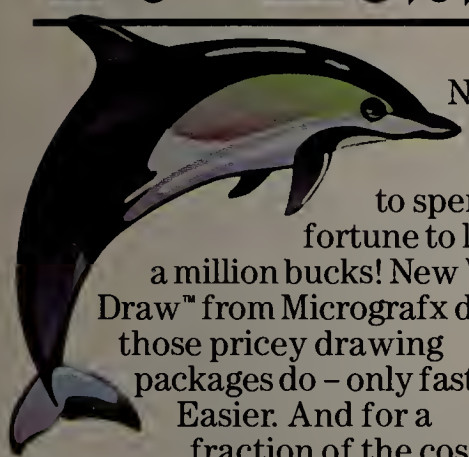
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321–1833

Do Everything Below For Less Than Any Of The Above.



Now you don't have to spend a fortune to look like a million bucks! New Windows Draw™ from Micrografx does what those pricey drawing packages do – only faster. Easier. And for a fraction of the cost!

Create dazzling graphics with ease.

"A must-have accessory...a remarkable value."
PC Magazine
12-31-91

"At $149, this program is a real steal."
InfoWorld
9-30-91

	Arts & Letters	Free-Hand	Harvard Draw	Corel	Windows Draw
Suggested retail price	$695	$595	$595	$695	$149
Gradients	Yes	Yes	Yes	Yes	Yes
Object blend	Yes	Yes	Yes	Yes	Yes
Bézier curve editing	Yes	Yes	Yes	Yes	Yes
Object rotation	Yes	Yes	Yes	Yes	Yes
Text on a curve	Yes	Yes	Yes	Yes	Yes
Outline fonts	Yes	Yes	Yes	Yes	Yes
Clip art	Yes	Yes	Yes	Yes	Yes
24-hr. tech support	No	No	No	No	Yes

Graphics for the rest of us.

Already do your own graphics? Windows Draw will make it easier than ever. And if you don't, it's a great reason to start!

Windows Draw isn't for artists or computer wizards. It's for business people like you. People who want to add impact to a proposal. New life to a newsletter. Or flair to a flow chart.

In fact, because it's compatible with your favorite PC programs, you can use Windows Draw to dress up just about *everything* you do.

Add impact to proposals, reports and newsletters.

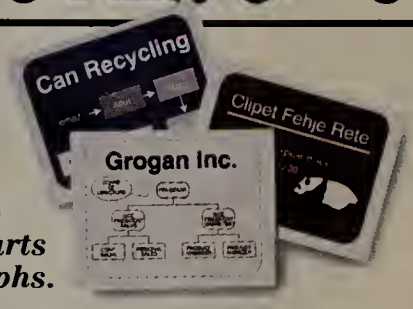
Easy does it.

With Windows Draw, easy-to-use drawing and color tools are right on the screen. Pull-down menus list an enticing selection of options available to you – including special effects like flip and blend. And "help" information is available at the touch of a button.

A way with words.

You can make your text look as good as your pictures, using Windows Draw in combination with PageMaker 4.0 or your favorite word processing package.

Do your own logos and letterhead designs.



Dress up your charts and graphs.

You can curve words, wrap them around pictures, shade them, color them, and much, much more!

A mammoth clip art library – free!

If you don't want to do your *own* drawings, you can choose from more than 2,600 ready-made images that come with Windows Draw. And you can modify and manipulate them the same way you do drawings made from scratch.

You'll never know how much you can do with Windows Draw until you try it. And with our money-back guarantee, what have you got to lose? Call to order today!

For technical illustration, ask about award-winning Micrografx Designer.™

30-day money-back guarantee!

1-800-669-2620

MICROGRAFX®

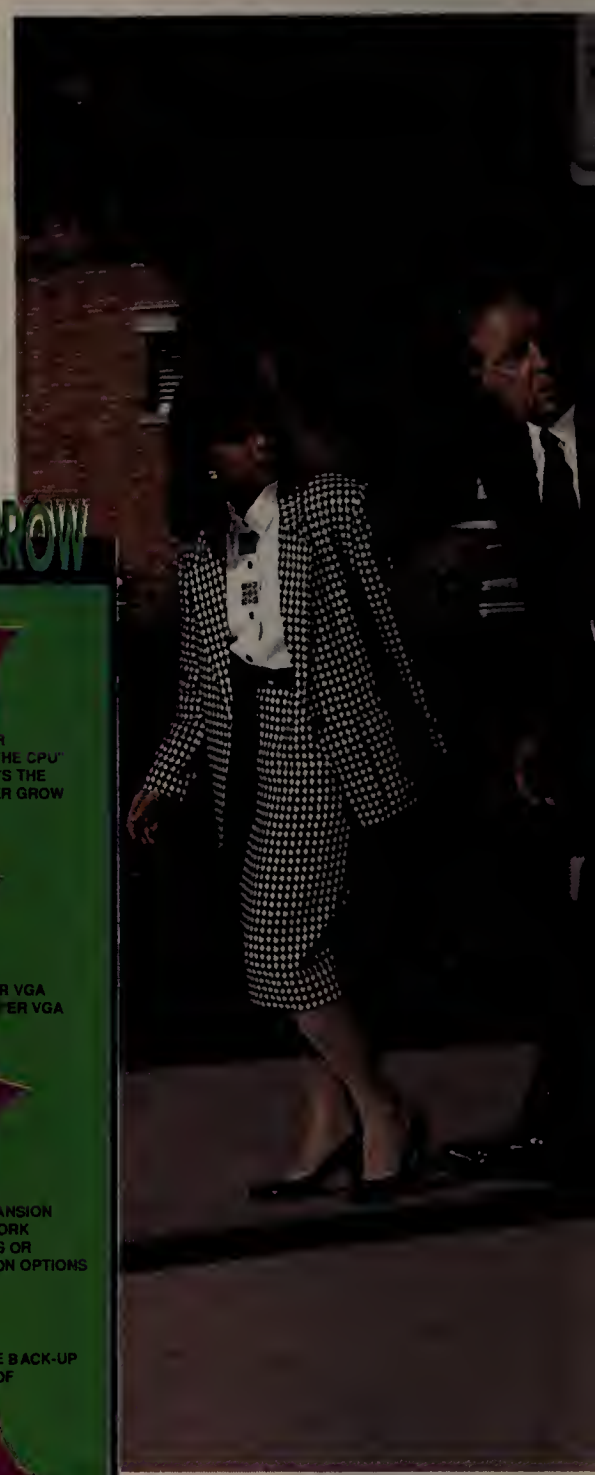
Micrografx, Inc. 1303 Arapaho, Richardson, TX 75081 (214) 234-1769. Micrografx has offices in Toronto, Paris, London, Munich, Milan, Sydney, Madrid, Copenhagen and Tokyo. Copyright ©1992, Micrografx, Inc. All rights reserved. Micrografx is a registered trademark and Windows Draw and Micrografx Designer are trademarks of Micrografx, Inc. All other products are trademarks or registered trademarks of their respective owners. All Windows Draw packaging and documentation made from recycled paper.

Circle 183 on reader service card

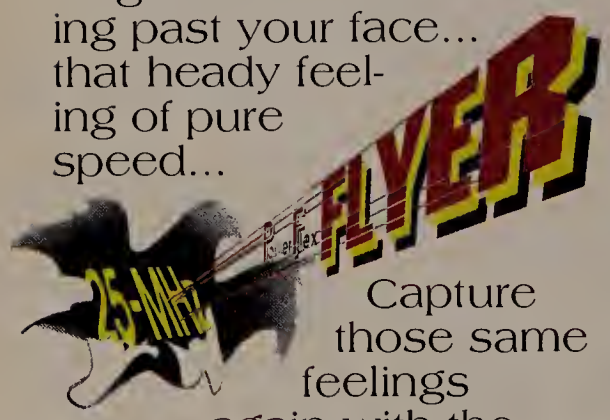
$995
NEW Intel 25-MHz 386SX
60-MB Disk
Super VGA
Upgradeable

Remember

Introducing Your Next.



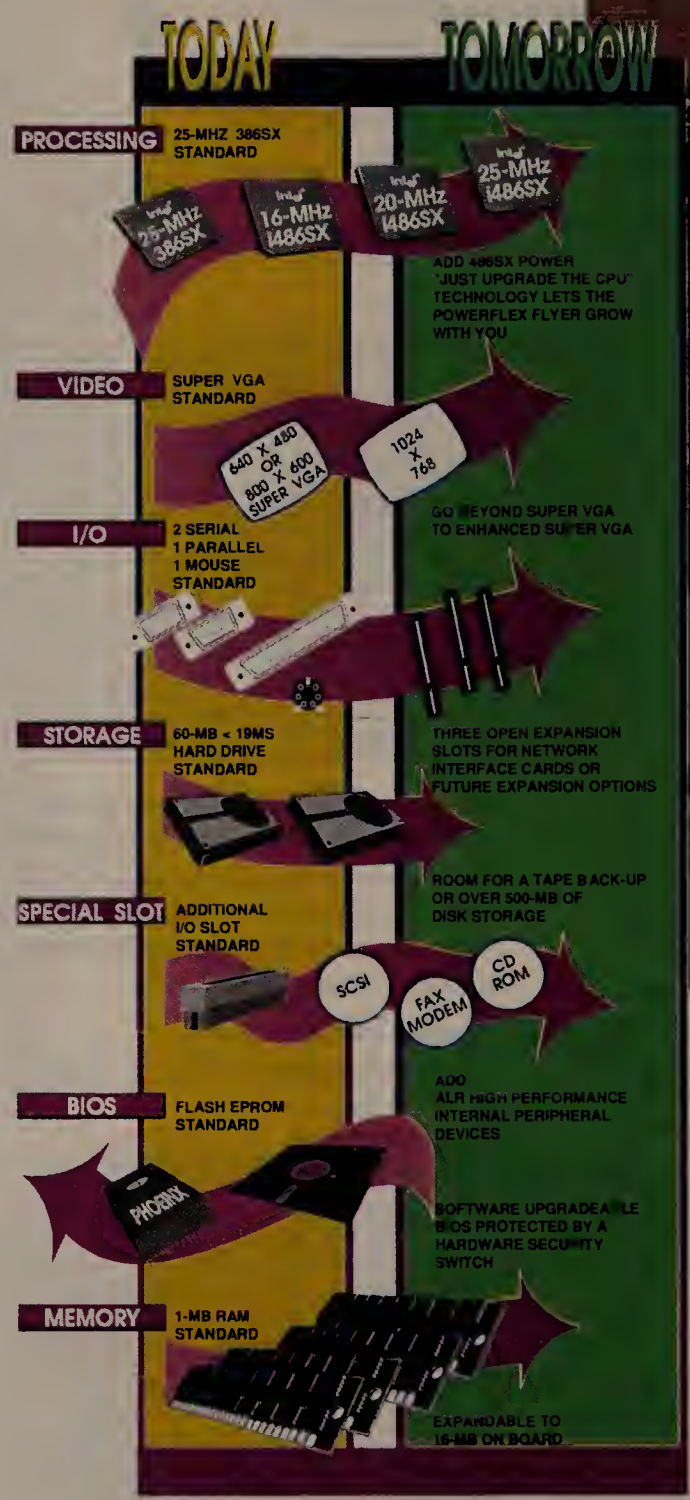
Remember how exhilarated you felt zipping down O'Grady's hill in your new, red FLYER wagon... the wind shooting past your face... that heady feeling of pure speed...



Capture those same feelings again with the ALR PowerFlex FLYER.

Powered by a trail blazing 25-MHz Intel® 386SX™ processor, the ALR PowerFlex FLYER delivers a wagon load of standard features for only $995.

Using Intel's fastest 386SX processor, the ALR PowerFlex FLYER outpaces higher priced 16-MHz 386SX PCs by more than 56%. Imagine flying through your Windows™ applications without having to wait for your PC to catch up.



PowerFlex Family Awards

And with the ALR PowerFlex FLYER, you can face the future without fear. Because of an advanced modular design, you can replace the 386SX pro-

NEW High FLYER Bundle... 80-MB Hard Drive • 2-MB RAM • Super VGA Monitor 1024 x 768 • 512-KB Video RAM • ALR MS-DOS™ 5.0 • Mouse ... $1,799 NEW

Your First Flyer?

cessor with a more powerful i486SX™ CPU whenever your computing needs change. You'd normally have to pay hundreds (or thousands) of dollars more to find this feature in a competitive system.

Visit an ALR reseller today, and find out what it's really like to fly. But you better hurry. At this price, the ALR PowerFlex FLYER is selling as fast as it runs.

For the name of the ALR reseller nearest you call:

1-800-444-4ALR

ALR®
Advanced Logic Research, Inc.

Irvine, CA 92718
TEL: (714) 581-6770

Prices and configurations subject to change without notice. Prices based on U.S. Dollars. ALR is a registered trademark of Advanced Logic Research, Inc. All other brand and product names are trademarks or registered trademarks of their respective owners. Intel Inside is a trademark of Intel corp.
©1992 by Advanced Logic Research, Inc.

Circle 9 on reader service card

Never Underestimate The Importance of Complete Protection.

Ouch!

What good is last night's backup if you just lost everything you worked on all morning?

And even if you have a data recovery product, it won't help when you write over a file and then discover you want it back.

And virus protection software is great. If all you have is a virus.

There are dozens of ways to lose data. If you bought a different product to solve every conceivable problem it would cost a fortune. You need PC Tools™.

Only PC Tools gives you complete data protection in one integrated package. All 28 utilities in PC Tools were designed to work together to make using your PC safer, simpler and faster.

With our award-winning Backup you can back up data automatically to just about any device, including all the most popular tape drives. In DOS or Windows.

Need to repair a hard disk? Undelete or repair files? Locate missing data? With PC Tools it's no problem.

And our Virus Protection can detect over 800 viruses on both local and network drives. Before they can cause any damage.

But data protection isn't the only reason PC Tools is a 20-time award winner. You also get Central Point's award-winning PC-Shell,™ Desktop Manager, PC-Cache,™ Commute™ Remote Computing, and dozens of other indispensable utilities.

Call us for the complete story on PC Tools. It makes everything else as outdated as a suit of armor.

1·800·445·4206

Central Point Software, INC.®

F·A·S·T • F·A·C·T·S

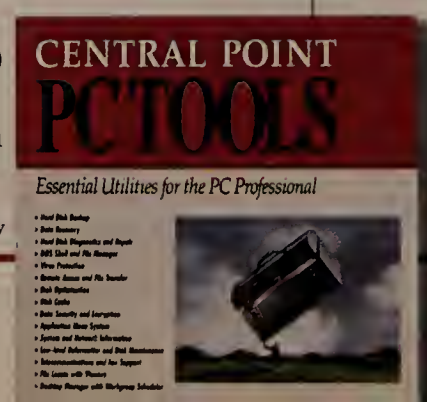
COMPLETE DATA PROTECTION

Backup for Windows & DOS
Disk & File Repair
Undelete with Delete Sentry™
Unformat
Disk Optimizer & File Locate
Virus Protection
Data Encryption & Security

PLUS

Full Windows Compatibility
DOS Shell & File Manager
Disk Cache
Remote Computing
System & Network Info
Desktop Manager

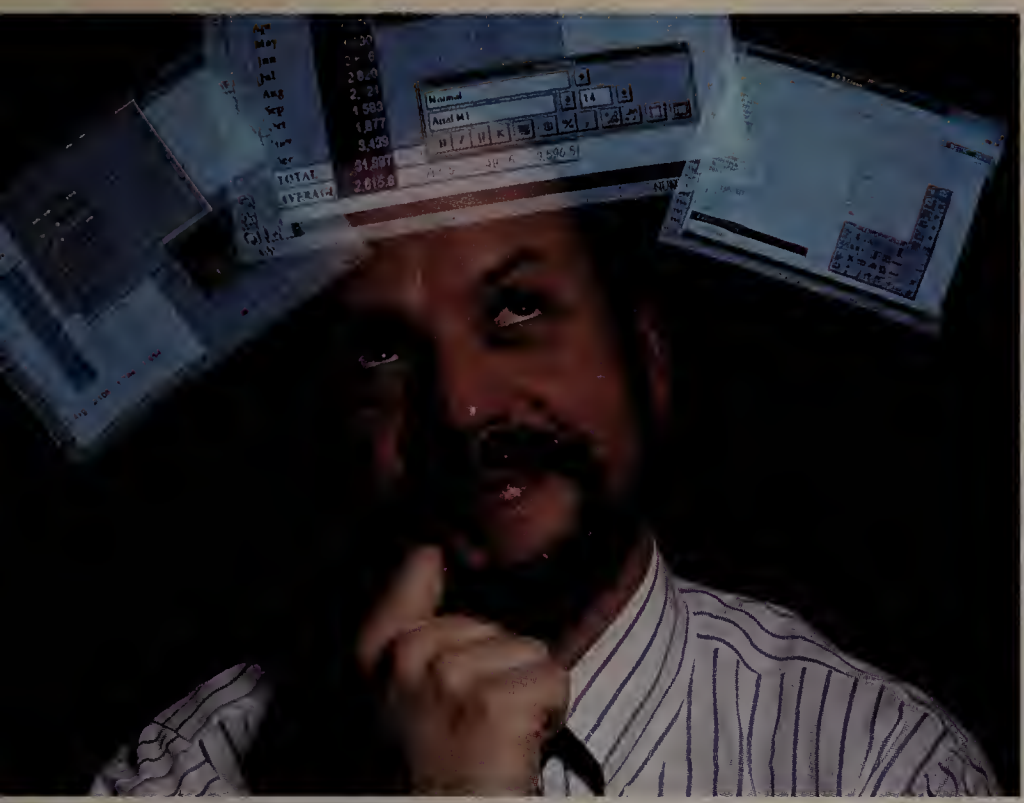
PC MAGAZINE BEST OF 1991 — Jan. 1992
PC WORLD WORLD CLASS AWARD — Oct. 1991
PC WORLD PRODUCT OF THE YEAR 1990 — Feb. 1991



© 1992 Central Point Software. PC Tools, PC Shell, PC-Cache, Commute and Delete Sentry are trademarks of Central Point Software.

Circle 52 on reader service card

Applauding Spreadsheets



Faced with choosing among excellent spreadsheets, Contributing Editor Richard Scoville opts for Excel 4.0.

WALTER CALLAHAN

Richard Scoville's preview of Microsoft's spectacular *Excel 4.0* follows by only one issue our preview of the best DOS spreadsheet ever, *Quattro Pro 4.0*. Borland's DOS spreadsheet and the forthcoming spectacular *Quattro Pro for Windows* straddle *Excel 4.0* strategically as well as chronologically.

Quattro Pro for DOS provides many of the benefits of *Windows*, without *Windows*. It also works so much like *Quattro Pro for Windows* that companies could reap productivity bonuses by standardizing on the pair of new *Quattro Pros*. The most compelling scenario for dual standardization plays out in companies that the recession has kept from upgrading to *Windows*-ready hardware. When economic conditions permit the forestalled hardware upgrades, users who know *Quattro Pro* for DOS can move easily to the *Windows* version.

The Applause Meter Speaks at Demo '92

But what if you're only trying to pick the best *Windows* spreadsheet? Few judges could be sharper or more critical than the attendees at Stewart Alsop's Demo '92. Here a group of industry insiders, venture capitalists, Wall Street analysts, and star technologists witnessed a "product debate" between product managers of *Quattro Pro for Windows* (beta), *Excel 4.0* (beta), and *1-2-3 for Windows*. After extended demonstrations and witty arguments by the three bright advocates, the astute mob shouted and whistled their opinions to an applause meter. This was harder than it sounds.

The problem was, each program deserved applause. They all do three dimensions well. *Excel* can intelligently format a selected area and consolidate data at the touch of a button. *Quattro Pro* provides an excellent metaphor for 3-D operations and makes child's play of linking operations to sliders and buttons. *1-2-3* does everything anyone dreamed of just six months ago.

When the shouting was over, the general impression was clear: *Excel 4.0* and *Quattro Pro for Windows* are dazzling, and they are surpassing a Lotus product that is itself strong. *Quattro Pro for Windows* received the highest mark, though no one can be sure that its margin was more than a single penetrating whistle. (Watch this magazine for Scoville's analysis of *Quattro Pro for Windows* in the near future.)

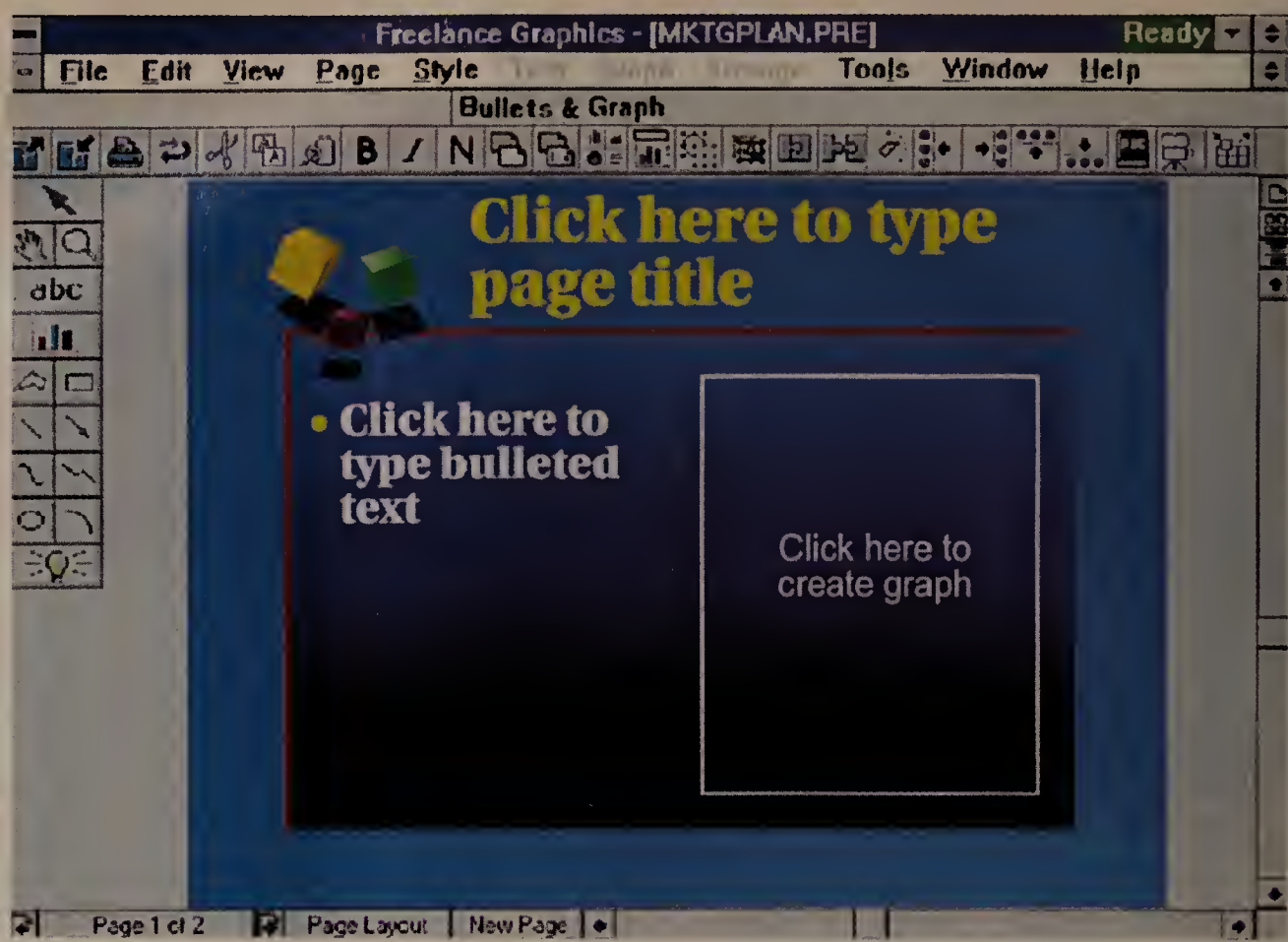
Though *Quattro Pro for Windows* won the spreadsheet debate, Microsoft won in a larger sense. It's clear that the multimillion-user *Windows* environment is generating more than one state-of-the-art application in each major category; *Quattro Pro for Windows* will sell more copies of *Windows*. Once again, Microsoft can't lose for winning.

The Challenge At Hand

VisiCalc pioneer Dan Bricklin showed Slate's pen-based spreadsheet, *At Hand*, at Demo '92. Running under Go Corporation's elegant PenPoint operating system, *At Hand* gives a taste of pen-based computing to come. Some operations are easier with pen than mouse; *At Hand* makes it possible to use a powerful spreadsheet when there's no place to set a keyboard. To woo many of today's spreadsheet users, however, *At Hand* must entice people away from *Windows* spreadsheets, and that task is getting harder every month.

One thing the recession has failed to slow is innovation in the PC industry.

Phil Lemmons
Editor in Chief



First, select a look from one of 60 SmartMasters™ designs that automatically manage the design and layout for you. Next, follow the on-screen prompts, filling in the blanks with text and graphics. Then, view your entire presentation at a glance for last minute edits and you're ready to go.

"If you can click a m stunning presentatio

In fact, PC/Computing continues, Freelance Graphics™ for Windows™ from Lotus® makes "the process ridiculously easy compared to what the competition requires. And the results make you look like a design pro." So yes, it's easy to use. But it's also incredibly easy to learn, thanks to its on-line tutorial, QuickStart, which leads you step-by-step through the entire process in minutes.

What's more, like all our Windows products, it features SmartIcons,™ which give one-click access to the tasks you perform most frequently, as well as the ability to launch directly into our other Windows applications. Each of which works together seamlessly, allowing you to quickly move and share

©1992 Lotus Development Corporation. All rights reserved. Lotus is a registered trademark and Freelance Graphics, SmartMasters and SmartIcons are trademarks of Lotus Development
*Freelance Graphics features Adobe Type Manager. **Please have product

Within minutes you'll have an impressive presentation that looks like it took days to produce. With slides, overheads, screen shows or complete documents. Of course, presenting with such great material can make you look and feel pretty good, too.*

ouse, you can create ns with this program."

–PC/Computing, 11/91

information between them all.

So try Freelance Graphics. And see why InfoWorld (1/6/92) says, "It lets you knock out presentations faster than the competition. And it's more fun to use."

We think you'll agree—from start to finish—you'll have everything you need to create a great presentation. As well as a great impression.

For a $9.95 working model trial version, or to upgrade from any graphics product, **call 1-800-872-3387,** ext. 6538.**

Freelance Graphics for Windows

Lotus

Corporation. Windows is a trademark of Microsoft Corporation. Adobe Type Manager and the ATM logo are registered trademarks in the United States, of Adobe Systems, Incorporated.
package and credit card ready when you call. In Canada, call 1-800-GO-LOTUS.

ATM

New for Windows 3.0/3.1

Uh-oh! Look what Microsoft® forgot.

Adobe Type Manager.™ New Express Publisher™ for Windows *includes* ATM™ 2.0 *plus* 13 PostScript® fonts, for truly creative designs. Microsoft Publisher™ forgot to include *any* Windows-standard fonts.

Styles. Express Publisher includes styles to produce great-looking pages in a hurry. (Import styles from your word processor, too.) Microsoft forces you to make all formatting changes manually.

Free Zoom. Express Publisher's Free Zoom sizes and centers specific portions of a page on-screen, for fast and easy attention to detail. Microsoft has only awkward pre-set percentages.

Wrap to Fit. Express Publisher wraps text around *any* shape, for sharp-looking layouts. Microsoft wraps only around rectangles – any word processor can do that!

Winter Issue — Volume 8, Number 2

A Travel Plus Publication

Gateways

INSIGHTS FOR THE BUSINESS TRAVELER

Three Great Places to Mix Business with Pleasure

If business is taking you on the road soon, why not extend your trip into a memorable vacation? Three exciting American cities, Boston, Chicago, and San Francisco, are luring increasing numbers of business travelers, and provide plenty of sights, sounds, and flavors to satisfy even the most demanding vacationer.

* * * * *

Too often, business "travel" limits one to a view of the hotel and convention hall, and not much else. Here's what you may have been missing all these years.

offers many rewards to those who take the time to uncover its cornucopia of riches.

For an interesting lesson in American history, don your walking shoes and follow the Freedom Trail (536-4100). The trail's two loops will lead you past no fewer than 16 historical sites, including the Old North Church, the location of the Boston Massacre, the Granary Burial Ground, the Old Corner Bookstore, Paul Revere's House, and the Old South Meeting House.

Beantown contains far too many historical gems to mention here, but make an effort to visit the Boston Tea Party Ship and Museum in southern Boston (338-1773), the John F. Kennedy Presidential Library (929-4523) in Dorchester, the Bunker Hill Monument in Monument Square (Charlestown, 242-5641), and "Old Ironsides" (426-1812, also in Charlestown).

(continued on page 4)

WOODE

BOSTON

Make the Most of Your Trade Show

TRAVEL PLUS BULLETIN

Suppose your company was going to attend an upcoming trade show. This would be an excellent opportunity to leverage the event. Your agenda might include making an important press announcement to the media covering the show, gathering your regional sales executives for a strategic review, and entertaining your key clients and contacts. You may be surprised to know that Travel Plus can help you arrange your entire trade show program.

(continued on page 4)

CONTENTS

Letter from the President 2

Travel City Temperatures 2

Atlanta: Metropolis 3

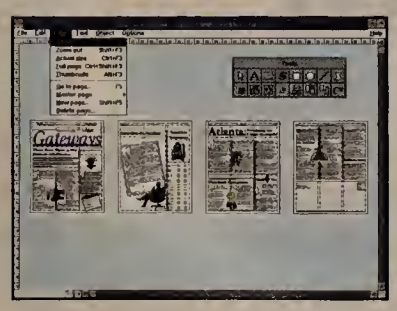
Travel Productivity 3

Kerning. For truly professional typography, Express Publisher gives you automatic *and* manual kerning control. It's the difference between [HAWAII] and [HAWAII]. Microsoft Publisher doesn't give you the same kerning control.

TextAppeal.™ Express Publisher includes TextAppeal for eye-catching special effects. Curve, rotate, shadow and stretch type freely. Microsoft's WordArt doesn't come close.

Free Rotation. Express Publisher lets you freely rotate "live text" and graphics. Microsoft forgot this feature.

Align and Equate. With Express Publisher you can align objects relative to each other, and instantly make any two objects the same size. Microsoft makes you resize and align objects by hand.



Fully editable "thumbnail view." Express Publisher lets you zoom-out to see *and edit* an entire document – up to 32 standard-size pages. Modify your whole newsletter at once. Grab and move items from page to page. Microsoft shows you only one page at a time.

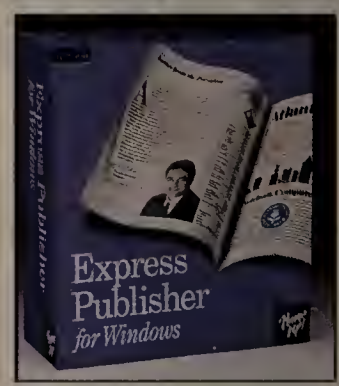
Express Publisher has it all – for under $250.

In addition to Express Publisher's superior layout capabilities, you get TextAppeal for Windows (a $129.95 value). TextAppeal is the fastest, easiest way to create eye-catching logos, starbursts and headlines for use with any Windows word processing, desktop publishing or presentation graphics program. Also included are ATM 2.0 and 13 PostScript font outlines (a $99 value), 100 high-quality clip art images, 15 professionally-designed templates and a built-in spellchecker. All this for under $250 from the makers of Express Publisher for DOS, the best-selling, low-cost desktop publisher for business professionals.*

Special TRADE-UP Offer:
If you already own another desktop publisher, trade up to Express Publisher for Windows for just $99.95.

Special UPGRADE Offer:
Upgrade from Express Publisher for DOS for just $69.95.

CALL FOR DETAILS. (Have your original program disk #1 ready.)



Visit your software reseller or call
1-800-851-2917
Ext. M202
7 a.m. - 5 p.m.
Pacific Time

Power Up! SOFTWARE CORPORATION

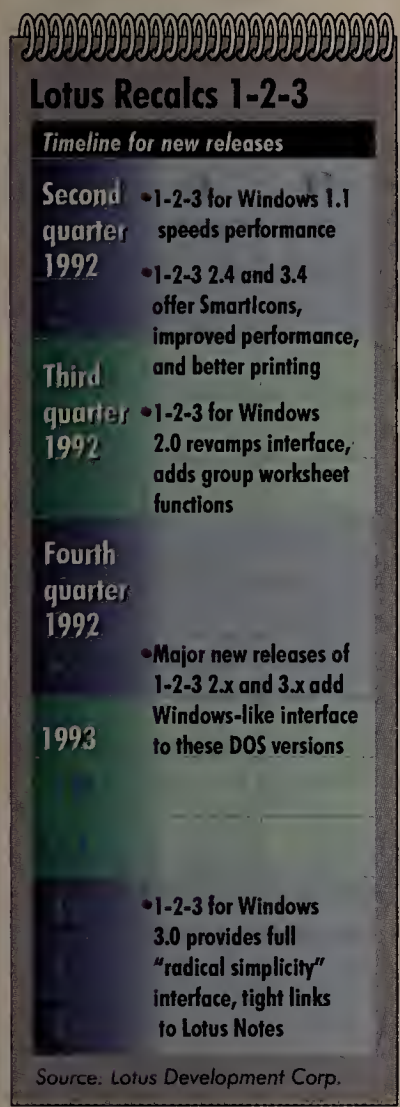
*Express Publisher for DOS contains most of the features mentioned above, for under $150. Express Publisher and TextAppeal are trademarks, and Power Up! is a registered trademark, of Power Up Software Corporation, 2929 Campus Drive, San Mateo, CA 94403. Adobe, Adobe Type Manager, ATM, and PostScript are trademarks of Adobe Systems, Inc. MS and Microsoft are registered trademarks, WordArt and Microsoft Publisher are trademarks of Microsoft Corporation. All other trademarks are the property of their respective holders.

Circle 211 on reader service card

Edited by RUSSELL GLITMAN

Lotus Unveils 1-2-3 Plans

Aims: "Radical Simplicity," Group Sharing



Lotus plans extensive refinements to its flagship spreadsheet in the next 12 months.

Struggling against increasingly formidable challenges from Microsoft and Borland, Lotus will release new versions of *1-2-3* this year that boast slicker user interfaces, faster performance, and new work group connections.

Debuting in April, *1-2-3* version 2.4 will add a limited version of the SmartIcon interface found in Lotus's *Windows* packages, the capability to handle multiple files, a back-solver module, and printing enhancements. Roughly two months later, *1-2-3* version 3.4 will incorporate a similar user interface, printing upgrades, and faster performance.

More dramatically, the *2.x* line will be fleshed out this fall with a fully graphical version that works on a 640K DOS machine but looks and operates very much like *1-2-3 for Windows*, says Lotus chief technical officer John Landry. A similar *3.x* version will follow within a few months, so *1-2-3* again will offer a relatively consistent interface on all PC platforms.

In April, *1-2-3 for Windows 1.1* will answer the biggest user complaint by providing zippier performance. This summer, release 2.0 will begin the move to what Landry calls "radical simplicity" with a rebuilt user interface. The redesign will emphasize drag-and-drop manipulation, context-sensitive menus, and (like its Borland and Microsoft rivals) the capability to click the right-hand mouse button on a screen object (such as a range or a graph) and get a pop-up menu of options. Lotus also plans voice annotations and animated Help. Version 3.0 will complete the move to radical simplicity.

1-2-3 for Windows 2.0's other important enhancement is multiple named scenarios for any given range of cells. This feature aids what-if analysis not only for individual users (the impressive *Excel 4.0* has a similar feature) but between work group members on a local area network. Customers who have *Lotus Notes* can share such worksheets over wide area networks as well. Lotus will also tightly integrate *1-2-3* and *Notes* so users can tap the services of either application from the other. —*Eric Bender*

Intel at Odds With Fast Bus Standard

Intel is squaring off against PC and chip set suppliers for control of the standard by which processors can communicate at CPU speed with peripherals. The struggle centers on a special local bus pegged to the processor's rated speed.

Debate began last month when the 100-member Video Electronics Standards Association (VESA) proposed a specification that would enable three peripherals to communicate directly with 386 and 486 processors at CPU speed. Once the standard was implemented, video or hard disk messages would travel to the CPU at its rated speed, up to 66 MHz, much faster than the 8-MHz limit of the ISA bus found in most systems. Faster I/O is especially beneficial for *Windows* screen updates.

But Intel is not a party to the VESA specification. Instead, the CPU kingpin is working with what Marketing Manager Mike Bailey calls "key PC and peripheral vendors" to develop a standard of its own. The Intel spec will be ready this month, but Bailey would say no more.

Several vendors have already released systems with local buses—most recently Bell Computer of Van Nuys, California, whose 40-MHz 3140GT employs the OPTi Local/CPU Bus chip set to extend the CPU bus for use by its graphics and hard drive controllers. Bell claims the 3140GT can send data five times faster over the OPTi bus than over the typical ISA bus.

Intel doesn't want PC makers to use an extension of the CPU-to-memory bus as a local bus. VESA prefers the local-bus method, according to Executive Director Tom Ryan, but the association agrees with Intel that an industry-wide standard is needed to ensure that all implementations enable peripherals to be shared. The VESA bus, which Ryan said could appear in systems by third quarter, is being designed for limited bus mastering and backward compatibility with Micro Channel, ISA, and EISA buses.

—*Mike Hogan*

Hyundai Offers a Lifetime PC Warranty

Mention Hyundai, and most people think cars. Hyundai Electronics America, the U.S. PC division of the Korean industrial conglomerate, wants to change that, so it's offering a limited lifetime warranty on its PCs as part of a new promotional campaign. The offer runs through June 30, according to company officials.

What do you get? The warranty covers the base PC including the motherboard, video board, floppy drive, and keyboard. For example, if your floppy drive bites the dust after five years of faithful service, Hyundai will replace it free of charge. The warranty does not cover monitors or hard drives that come with the system and is limited to the PC's "original user." In other words, if you sell the PC, the warranty is void.

According to the company, buyers of Hyundai PCs will also receive discounts on software from Borland, Software Publishing, Proteo, and other vendors. —*Jeff Bertolucci*

PC Theft Ring Uncovered

The Carrollton, Texas, Police Department in conjunction with the Federal Bureau of Investigation has uncovered a burglary ring that allegedly stole PCs worth more than $600,000 from Dallas area businesses and resold them as far away as New York.

According to police, the burglars raided computer stores, warehouse clubs, and offices, then turned the goods over to employees of a Carrollton PC company, who shipped them to contacts out of state.

Few victims recorded their machine's serial numbers, so the units are difficult to trace, says Carrollton police detective Tom Pease, who adds, "If victims don't have their serial numbers, we can't prosecute."

The extent of the losses is hard to gauge, but police estimate that one of the nine burglars arrested netted more than $500,000 in a month. The Carrollton Police Department is holding $200,000 worth of unclaimed merchandise.

Police launched the investigation after an unsuspecting PC buyer noticed a name and phone number on the hard disk of his newly purchased used computer and thereby contacted one of the victims. Since the thieves hadn't bothered to reformat the hard drives of the stolen PCs, police have been able to return many machines. People with information relating to this case can call *PC World* Editorial at 415/546-7722 to be referred to a contact at the Carrollton Police Department.

To increase your chances of recovering your PC if it's stolen, you can leave an electronic trail by putting your name and phone number in a file called OWNER.FIL and hiding it on your hard disk with the DOS 5.0 command **ATTRIB +R +H C:\OWNER.FIL**. Your message can be read later using file viewers in shells like *The Norton Utilities* or *PC Tools*.

For more protection, you can add a message to your PC's AUTOEXEC.BAT file that displays your name and phone number when the computer boots. —*Mike Hogan*

Take a Byte out of Crime

Add to Your AUTOEXEC.BAT:

```
@Echo off
Prompt $p$g
Path=C:\;C:\DOS;C:\Batch
Set Temp=C:\Temp
Cls
Echo THIS PC IS STOLEN
Echo CALL YOUR NAME
Echo YOUR PHONE NUMBER
Pause
```

Add the last five lines of this sample alert to your AUTOEXEC.BAT to help police recover your PC if it is stolen.

Microsoft Removes Its Chinese Wall

Proving what many observers suspect—that Microsoft has little fear of the Federal Trade Commission's investigation into its competitive practices—the software giant has consolidated all software development, including systems, applications, and tools, into the single Worldwide Products Group as part of a sweeping management reorganization.

The consolidation came as part of an executive shuffle in which Microsoft president Michael Hallman was ousted and replaced by a three-member Office of the President. The reorganization removes the "Chinese Wall" that Microsoft officials had said effectively separated its applications and operating systems development groups and ensured that the former did not receive any advantage denied other developers.

The changes are not expected to affect Microsoft customers immediately, although current and would-be users of Microsoft languages and database development tools may see some benefits, say users and analysts.

"The [new] development divisions are intended to keep our focus on the customer," says Mike Maples, former head of Microsoft's applications group, now executive vice president in charge of the Worldwide Products Group. He adds that "the new organization is designed to keep development teams small, resulting in better products and shorter development cycles."

Some *Windows* developers have privately complained that the applications group's proximity to the company's operating systems group gave it an unfair advantage. But these objections didn't prevent Microsoft from consolidating application and operating system development. Microsoft did not consider the current FTC probe into its competitive practices when formulating its reorganization, says Maples. —*Rob Garretson*

Windows 3.1 Enables Portable Documents

The principal features of Microsoft's *Windows 3.1* have been known for some time, or so most people thought. In February, Microsoft revealed that one key new feature, TrueType, in fact offers a lot more than scalable fonts. It turns out that you'll be able to use future TrueType fonts, which will be available from a variety of vendors, to create documents that retain their format and fonts on any *Windows 3.1* machine—even if the fonts aren't installed on that system.

Making use of this TrueType capability involves *embedding*—inserting the desired fonts into the document file itself. When you save a document, future applications that support embedding will request the font information, which will be saved with the document. As a result, *Windows 3.1* documents will be entirely "portable," says George Moore, TrueType product manager.

But there's more. If you receive a file containing future third-party read/write fonts that will be available late this year, you effectively gain complete rights to those TrueType fonts, even for future use with other documents. Most embedded TrueType fonts will be read-only: They'll temporarily install themselves on a system so that the receiver can view the document and print it out. The fonts will be flushed from the system when the document is deleted.

Moore says Agfa, Bitstream, and Monotype will produce TrueType fonts employing the read-only strategy, while Bigelow & Holmes will release 22 Lucida read/write TrueType fonts. At press time, Aldus, Corel, and Microsoft planned to support embedding in forthcoming applications. Moore adds that the capability will also be available in the upcoming *Windows NT* environment-cum-operating system due out late this year.

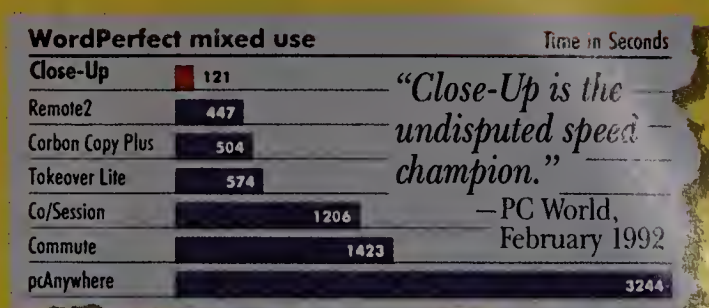
The move is designed to promote TrueType as an alternative to Adobe's Type 1 PostScript fonts. Last year, Adobe announced a PostScript-based technology, codenamed *Carousel*. —*Steve Fox*

Close-Up Wins Remote Honors

PC WORLD

Close-Up is fast, easy to use, and reliable. What else do you need in a remote package?

Close-Up Dual Pack 4.0 earns its Best Buy by virtue of lightning speed, an easy interface, reliable error handling, and a complete set of tools for controlling one computer from another and collaborating with a partner. It's also the only package that can run Windows reliably from afar—even in extended mode. Runner-up **Remote2** isn't quite as fast, and its toolbox is smaller, but it is perfectly dependable with graphics.



"Close-Up is the undisputed speed champion." —PC World, February 1992

Excellent ★★★★
Good ★★★
Fair ★★
Poor ★

	Reader service number	Performance	Ease of use	Controlling the host	Collaboration	Service and support	Standard communications	Price	Overall value
Carbon Copy Plus 6.0	671	☆☆½	☆☆½	☆☆	☆☆☆½	☆☆½	☆☆	☆☆☆½	★★½
Central Point Commute 1.1	673	☆½	☆½	☆☆	☆☆	☆☆	½	☆☆☆☆	★★
Close-Up Dual Pack 4.0	672	★★★★	★★★★	★★★★	★★★★	★★	★★★	★★★½	★★★★
CO/Session 6.0	674	☆☆☆½	☆☆½	☆½	☆☆	☆☆☆½	☆½	☆☆☆½	★★½
pcAnywhere 4.03c	675	½	☆☆	☆½	☆☆☆☆	☆☆	☆	☆☆☆½	★½
Remote2 2.1	676	☆☆☆	☆☆☆☆	☆☆½	☆☆½	☆☆☆½	☆☆½	☆☆☆½	★★★
Takeover Lite 2.0	677	☆½	☆½	☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆½	★★

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

Actual test results reprinted from PC World's Review of Remote Communications Software, February 1992.

Now Supports Both Windows & DOS

Remote Performance: Why Close-Up is Best

- *Supports both Windows and DOS with the same program.*
- *Fastest VGA, EGA and CGA graphics.*
- *Fastest file transfers and remote screens.*
- *Runs Windows in all 3 modes. No restrictions.*
- *Runs multiple Windows and DOS applications simultaneously, full-screen or windowed.*
- *Remote mouse and keyboard control.*
- *Self-installing, fully-automated for fast, easy operation.*

Call for FREE Working Model

"Close-Up...The Best Program You Can Buy for Remote Control"

—Reprinted from PC Magazine, January 14, 1992

The Ultimate Remote Program

"Norton-Lambert's Close-Up is the fastest, easiest, and the most reliable program we looked at..." —PC World, February 1992

The results are in and the experts agree. New Close-Up 4.0 has proven time and again to be the most advanced remote control system available.

Close-Up lets you view & control PCs miles away *by modem.* Now with full support for Windows, DOS, graphics and mice at record-breaking speeds, Close-Up is the fastest, easiest way to handle all your remote communications needs.

What You Can Do:

- ✔ Take control of PCs at any location.
- ✔ Work remotely on the road via laptop.
- ✔ Control your office PC from home.
- ✔ Access your company's branch offices.
- ✔ Train your associates on any application.
- ✔ Help customers miles away, remotely.
- ✔ Transfer text, data, any file between PCs.
- ✔ Remotely install and run Windows.
- ✔ Automate remote operations at night.
- ✔ Access networks all over the world.

Winner of the Top Awards

"Close-Up has been highly polished and it's flexibility and capability clearly make it the best program you can buy for remote control."
—PC Magazine "Best of 1991," January 14, 1992

"If you're serious about going remote, check out Close-Up. The program's handling of Windows is simply dazzling."
—PC World "Best Buy," February 1992

"Close-Up is one of the fastest products we've seen. It had the fastest file transfer times and the shortest times redrawing the screens."
—LAN Times, November 18, 1991

"You will not find a better all-around remote-control program."
—PC Magazine "Editors' Choice," February 25, 1992

Control both Windows and DOS with just one program

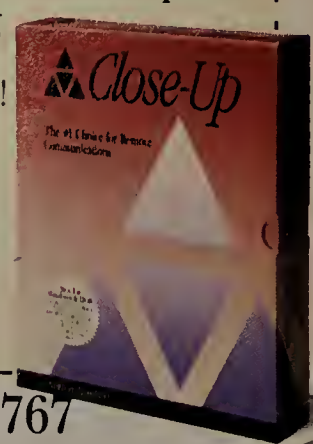
Now with double the remote power, Close-Up gives you full support of *both* Windows and DOS. That's like getting two remote programs for the price of one!

Spectacular Savings!

Now you can receive the Close-Up 4.0 Dual Pack including both sides for only $199—you save $240!

Upgrade Now!

Upgrade your current remote program to new Close-Up 4.0. Call for special pricing.



Call 805-964-6767

Norton-Lambert®

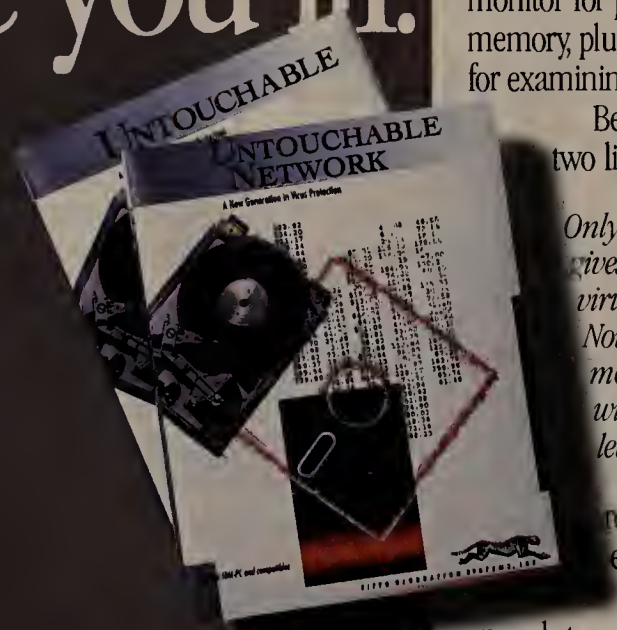
Bringing People Together®

P.O. Box 4085, Santa Barbara, CA 93140 USA
Phone 805-964-6767 Fax 805-683-5679

Limited time offer. All prices in US Dollars. Prices exclude shipping. © 1992, Norton-Lambert Corp.

Circle 190 on reader service card

Paying again and again for virus protection is enough to make you ill.



Frankly, paying anything at all is pretty nauseating.

But that's nothing compared to the feeling you get in your stomach when a drive full of data goes down the drain.

So you pay.

Then you pay again. For upgrades. Or quarterly "updates."

But even that doesn't buy you much peace of mind. Because each new day brings an average of six new viruses into the world.

Which means all anti-virus programs are inherently obsolete.

Except one.

Introducing Untouchable.™ The only software in the world that gives you 100% protection.

Today.

And tomorrow.

Like other anti-virus software, Untouchable is equipped with a TSR monitor for patroling your system memory, plus a scanner/remover for examining the files on your disk.

Between them, these first two lines of defense can

Only Untouchable Network gives you centralized virus protection. Now you can install, monitor and control without having to leave your seat.

recognize and obliterate hundreds of the little buggers — enough to protect you from 95% of the potential carnage.

If you find that statistic reassuring, then you probably like the odds in Russian Roulette.

If you don't, you'll want to know that Untouchable is equipped with a unique *third* line of defense, which has been mathematically proven to be, well, untouchable.

Instead of looking for viruses, this third line of defense looks for *changes in your executable and system files.*

If the change is but a single byte, Untouchable will spot it and, using our patent-pending recovery technique, reconstruct the file to its original state.

The process is known as Generic Differential Detection, and certain other programs claim to perform it, too.

But only Untouchable calculates file signatures using not one, but two proprietary algorithms that can't be reverse-engineered.

Only Untouchable guarantees 100% safe recovery of infected files. (Unlike other programs that proudly generate corrupted files, Untouchable knows when the jig is up and doesn't attempt recovery.)

Only Untouchable can provide centralized network virus protection. In fact, Untouchable Network has enough virus alerts and reporting mechanisms to settle the stomach of even the most nervous Netware® administrator.

And only Untouchable is backed by our vaunted 24-hour toll-free technical support and a one-year money-back guarantee.

If you're worried about viruses — and you should be — don't reach for the Maalox.® Reach for the phone. Dial 1-800-388-0362.

You'll feel better right away.

FIFTH GENERATION SYSTEMS, INC

Circle 01 on reader service card

WHAT ? NEXT

By Mike Hogan

Windows Gets Cosmetic Surgery

Windows 3.1 still ain't nothin' but a hound dog.

MICHAEL LLEWELLYN

Reality is such a very elastic commodity. I used to disregard the reports of Elvis sightings—just skim over those stories at my supermarket library to get right to the good stuff about the dog babies from Venus. But years of page turning and nightly Elvis updates on the tube and, finally, Bill Bixby's definitive "The Elvis Conspiracy" have got me rethinking my position.

Maybe I'm out of touch. Maybe Elvis really is hiding out in a bunker under Graceland and going around impersonating a guy named John Burrows. Yeah, and maybe *Windows* is easy to use. Or—as Madonna so eloquently puts it—"Not."

Rocket science was not my major, but I know what happens when "big concept" is distilled in media hype. I haven't believed a damn thing anyone has told me about *Windows* since one Microsoft product manager looked me in my face and insisted I could run his *Windows* application on a 286 with 1MB of memory. Sure I can, but I'd like a life.

You've been told by the press so often that *Windows* and *easy* somehow go together that you may wonder why you find the environment hard to navigate, painfully slow, and prone to hara-kiri.

You're not alone. Talk to advanced users, *Windows* consultants, even *Windows* vendors. Get past the consistent-user-interface platitudes, and they'll show you scars—on top of scars.

Reality is, *Windows* doesn't protect you from bad old DOS. Instead of just PATHing your AUTOEXEC.BAT and picking a DOS shell, you now must edit and reedit lines of WIN.INI, SYSTEM.INI, and PIF files as your applications change.

Version 3.1 ameliorates some of the most glaring problems: A still-anemic File Manager is beefed up, system resources are better allocated, and while DOS apps still crash, they now do so in more orderly fashion. But you'll still be Balkanized by this would-be multitasker, unable to reach easily through a window frame to get what you want when you want it. Version 3.1 still ain't nothin' but a hound dog—a slow hound dog unless it's riding around in a 386 with at least 4MB of memory and 100MB of disk.

That's not to say you shouldn't use *Windows*. If you pass it over, you'll miss really good apps that are not only more powerful than their DOS counterparts but oddly enough, more fun. But the environment? The Macintosh it ain't.

Windows shells and utilities can help. It makes infinitely more sense to work from within *Norton Desktop for Windows* with its enhanced file management tools than to switch between Program Manager and File Manager. But of course, that means running a shell on top of an environment on top of DOS, and *NDW* has been known to be slow.

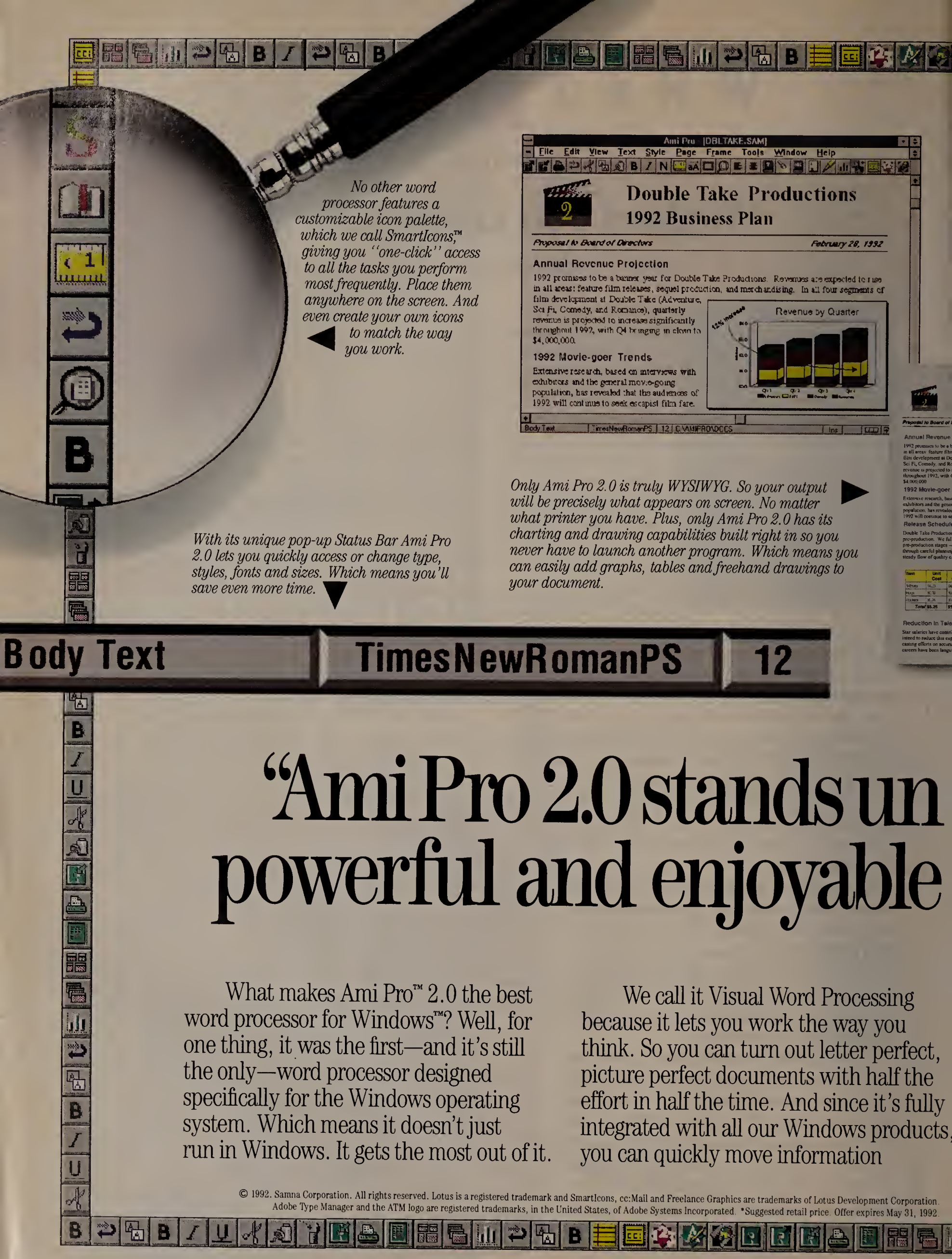
You'll see a much faster, richer version in April. Also due about that time is a new shell from Xerox PARC spin-off XSoft: *Rooms for Windows* will let you optimize multiple desktops and asks only 88K of memory for itself.

If *Windows* reality fulfilled *Windows'* press, these add-ons wouldn't exist. Even with them, *Windows* won't behave for you unless you throw a lot of computer at it. That's reality.

WHAT TO WATCH

Norton Desktop for Windows 2.0, due in April, is a kinder, gentler add-on that makes *Windows 3.1*'s promise of drag-and-drop a reality across different windows and lightens bothersome housekeeping chores .... **Rooms for Windows** has a slick way to implement multiple virtual desktops: You create "rooms" where you can fine-tune different projects' apps and files, hopping between them through "doors" .... A Multisoft utility triad planned for summer speeds up system performance and makes it easier to mix and match the *Windows* tools from other companies .... If you don't mind really getting your hands greasy, the Windows User Group Network's **System Engineer** lets you edit many undocumented *Windows* parameters. Easier to use than Microsoft's little-known SysEdit, *System Engineer* goes free to members starting in April.

Questions? Contact me at 213/312-8041, 213/312-8048 (fax), PC World Online, or MCI Mail 329-2648.



No other word processor features a customizable icon palette, which we call SmartIcons,™ giving you "one-click" access to all the tasks you perform most frequently. Place them anywhere on the screen. And even create your own icons to match the way you work.

With its unique pop-up Status Bar Ami Pro 2.0 lets you quickly access or change type, styles, fonts and sizes. Which means you'll save even more time.

Only Ami Pro 2.0 is truly WYSIWYG. So your output will be precisely what appears on screen. No matter what printer you have. Plus, only Ami Pro 2.0 has its charting and drawing capabilities built right in so you never have to launch another program. Which means you can easily add graphs, tables and freehand drawings to your document.

"Ami Pro 2.0 stands un powerful and enjoyable

What makes Ami Pro™ 2.0 the best word processor for Windows™? Well, for one thing, it was the first—and it's still the only—word processor designed specifically for the Windows operating system. Which means it doesn't just run in Windows. It gets the most out of it.

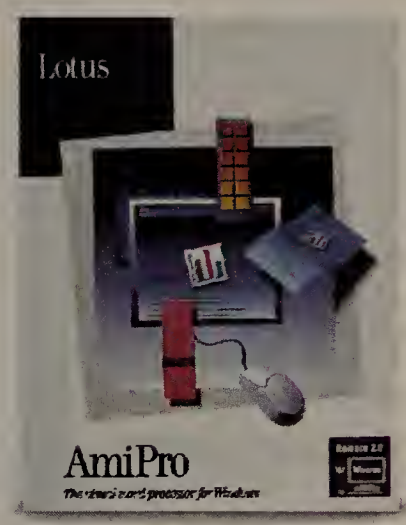
We call it Visual Word Processing because it lets you work the way you think. So you can turn out letter perfect, picture perfect documents with half the effort in half the time. And since it's fully integrated with all our Windows products, you can quickly move information

© 1992. Samna Corporation. All rights reserved. Lotus is a registered trademark and SmartIcons, cc:Mail and Freelance Graphics are trademarks of Lotus Development Corporation. Adobe Type Manager and the ATM logo are registered trademarks, in the United States, of Adobe Systems Incorporated. *Suggested retail price. Offer expires May 31, 1992.

Ami Pro 2.0 is the only word processor that gives you built-in single-click access to cc:Mail™ electronic mail. So you can quickly send "live" Ami Pro documents to anyone you work with. Without leaving the application.

We've even included Adobe Type Manager® which comes with 13 scalable fonts to make your type look as good on screen as it does on paper.

Since all our Windows products are fully integrated, you can—by simply clicking an icon—launch into any one of the applications directly. So you can move and share data between them with incredible ease.



challenged as the most Windows word processor."

—PC Magazine 11/12/91

between them with no hassles at all.

Maybe that's why Ami Pro 2.0 is not only making word processing easy. It's making headlines too. To upgrade to Ami Pro 2.0 from another word processor for only $129,* or for a free working model, **call 1-800-545-6116, ext. 6517.**

Ami Pro for Windows

Lotus

ATM

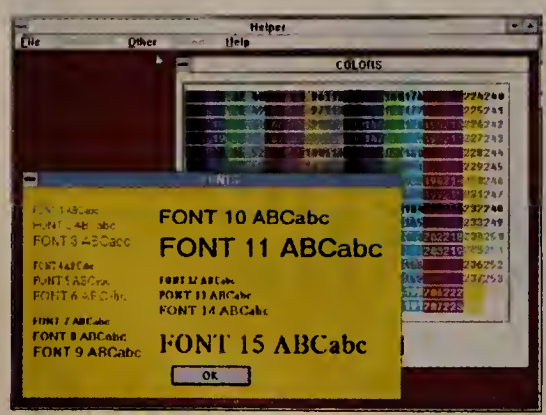
Ami Pro is a trademark of Samna Corporation, a wholly-owned subsidiary of Lotus Development Corporation. Windows is a trademark of Microsoft Corporation.
Call for a list of eligible word processors. Please have your credit card and product package ready when you call. In Canada, call 1-800-GO-LOTUS.

Circle 175 on reader service card

Attention All dBASE Users: Your Windows Have Arrived.

Introducing new dBFast.™ The first and only dBASE™ compatible database and dBASE/X-Base language for Windows. It's the fastest, smartest and easiest way for millions of users and developers to join the Windows revolution.

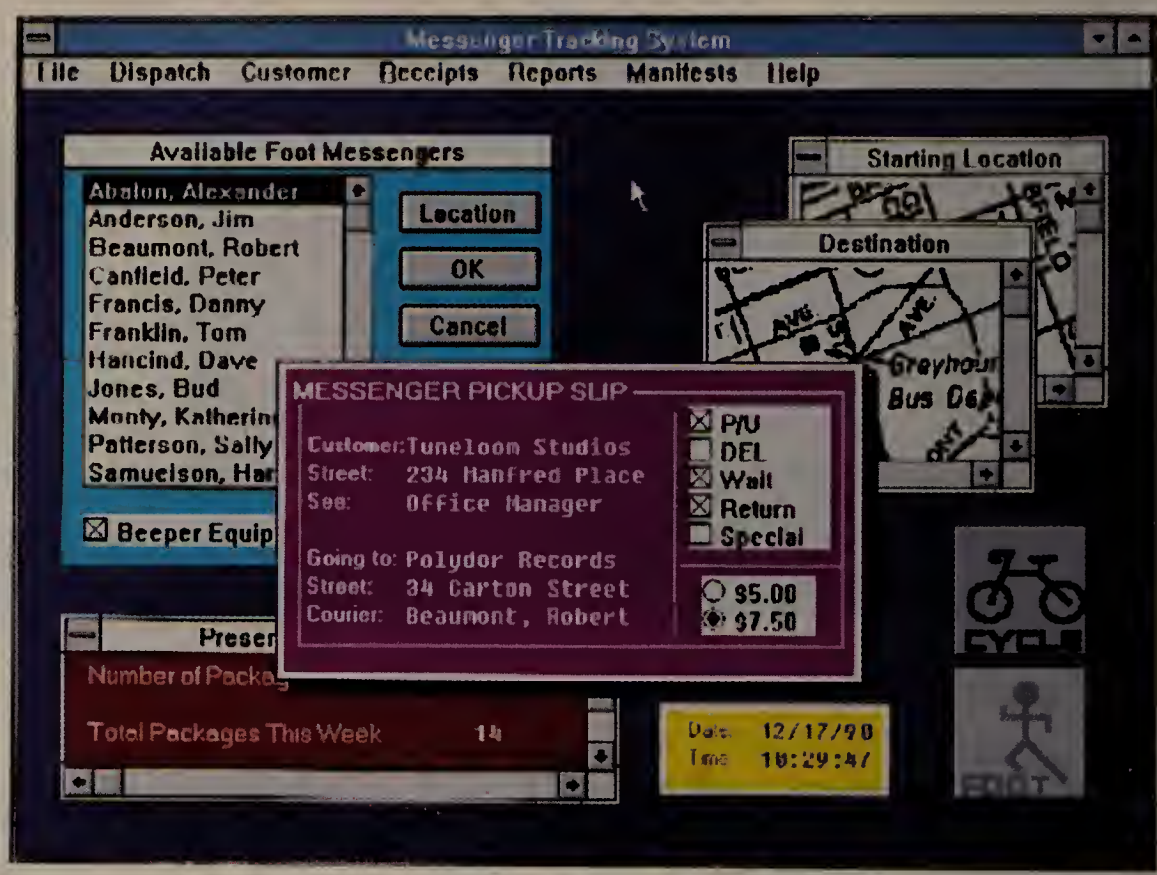
Graphical, colorful dBFast will bring new life to all of your existing dBASE programs.



Your applications will really come to life with multiple colors and fonts.

Liven them up with multiple, movable windows, pull-down menus, check boxes, dialog boxes, radio buttons, push buttons and bitmap pictures.

dBFast also helps you create new dBASE programs quickly and easily.



dBFast helps you create powerful, graphical database applications quickly and easily with pull-down menus, check boxes, radio buttons and even bitmap images.

Unlike other Windows development systems that force you to learn a new language, dBFast allows dBASE, Fox and Clipper developers to use the language they already know with more than 200 extensions and an interactive editor, compiler and linker.

And full industry standard DDE and DLL protocols allow your programs to communicate with other Windows applications.

So call 1-800-CALL CAI and we'll rush you a free Demo Disk.

Call right now.

After all, haven't you waited long enough?

COMPUTER ASSOCIATES®
Software superior by design.

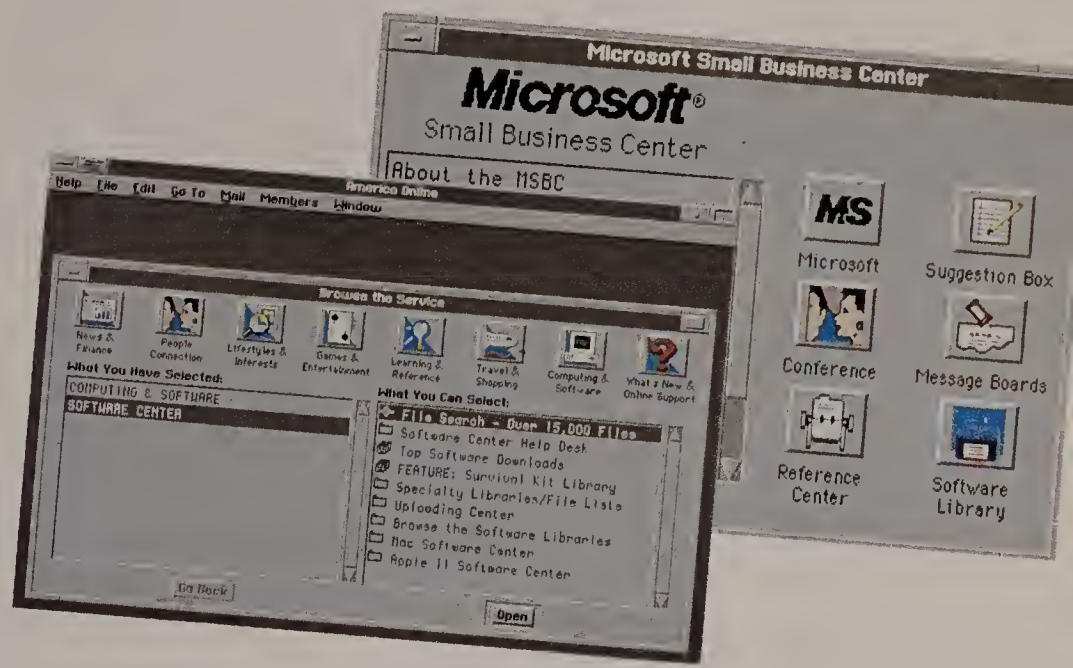
MICROSOFT® WINDOWS™

dBFast™

© 1991 Computer Associates International, Inc., 1 Computer Associates Plaza, Islandia NY 11788-7000. All trade names referenced herein are trademarks of their respective companies. dBASE is a registered trademark of Ashton-Tate Corporation

Circle 42 on reader service card

AMERICA ONLINE: IT'S SO GOOD, IT'S FREE.



AN EXCITING NEW WORLD OF COMPUTING IS JUST TWO SNIPS AWAY.

Clip and return this coupon, and we'll send you—absolutely free—everything you need to start using America's most exciting online service: America Online. We're so sure you'll love America Online, we'll give you the software you need to get started, a free trial membership and free connect time so that you can explore this fascinating new world of information, computing support, entertainment and personal enrichment.

EASY TO USE, YET POWERFUL.

A unique point-and-click environment lets you navigate through America Online's many services quickly and efficiently. You'll be an expert in no time.

Get fast answers from hardware and software developers, reviewers, and computing experts. Scan for objective reviews on thousands of computing products. Browse software libraries filled with thousands of programs you can choose and use offline. Novice or pro, America Online will enhance your computing experience.

You'll profit from America Online in other ways, too. Send and receive electronic mail with ease. Get nightly homework help for the kids. Manage your investments. Get the latest news and weather. Join special interest groups and clubs. Save time and money shopping. Find and book the lowest airfares. Entertain yourself with games, quizzes, movie and book reviews, horoscopes, soap opera news, and much more.

DON'T DELAY— ORDER YOUR FREE SOFTWARE NOW!

Find those scissors, clip the coupon, and get ready to enter an exciting new world of computing.

RESPOND BY 5/31/92!

☐ YES! Send me the free software and trial membership. I understand there's no risk—if I'm not thrilled, I may cancel without further obligation.

NAME

ADDRESS

CITY

STATE ZIP

( )
HOME PHONE

DISK SIZE: ☐3.5" ☐5.25"

You must have ☐a PC/XT or higher; ☐512K memory or higher; ☐a hard drive; ☐a mouse; ☐a modem; ☐EGA or Hercules monitor or above to use America Online.

5770/PC

How Many of These America Online Services Could You Use—Right Now?

- ☐ Stock Quotes and Portfolio Management
- ☐ More Than 15,000 Software Files and Programs
- ☐ Fast, Easy Downloading
- ☐ Searchable Online Encyclopedia
- ☐ Powerful Electronic, Fax, and U.S. Mail Capabilities
- ☐ Microsoft® Small Business Center

- ☐ Multi-Player Graphic Games
- ☐ Access to Computer Industry Experts
- ☐ Special Interest Groups and Clubs
- ☐ Graphic Windowing Interface
- ☐ Homework Help and Tutoring Sessions

Mail this coupon in today for your FREE trial of America Online!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 9096 VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE

America Online®
8619 Westwood Center Drive
Vienna, VA 22182-9806

Respond By 5/31/92!

Free Trial! Free Software!

☐ YES! Send me the free software and trial membership. I understand there's no risk—if I'm not thrilled, I may cancel without further obligation.

NAME

ADDRESS

CITY

STATE ZIP

( )
HOME PHONE

DISK SIZE: ☐3.5" ☐5.25"

You must have ☐a PC/XT or higher; ☐512K memory or higher; ☐a hard drive; ☐a mouse; ☐a modem; ☐EGA or Hercules monitor or above to use America Online.

Clip and mail to:
America Online
8619 Westwood Center Drive
Vienna, VA 22182

America Online is a registered service mark of America Online, Inc.
Microsoft is a registered trademark of Microsoft Corporation.

5770/PC

LETTERS

Reactions and responses from the PC World community

JOHN CUNEO

Bad News, Good News

It's unsettling these days to read about the throes of companies in trouble, especially one as large and successful as Compaq. But as a consumer, I think competition in the PC marketplace and what it's forcing companies such as Compaq to do is terrific. For ages, it seemed that vendors charged whatever the market would bear, and we consumers paid through the nose—often ending up with faulty equipment and inadequate service and support. If the current competition makes Compaq and other vendors tighten their belts and listen to their customers, I'm all for it.

I crossed Compaq off my list of possible vendors years ago, but if the company learns to listen and respond to the people who buy their products, then I'm one of many who'll put it right back at the top of my list.

Brian Evanston
Atlanta, Georgia

ANTHONY RUSSO

High-Speed Modems

I'm an avid user of BBS's and appreciated the buyers' guide on high-speed modems [December 1991]. But you should have covered more 9600-baud V.32bis/V.42bis modems. I had to check catalogs to see if the models you listed supported V.42bis and communicated at 9600 or 14,400 baud.

Michael Chu
Sepulveda, California

As the article's introduction explained, all the modems we listed support the V.42bis standard and communicate at both 9600 and 14,400 baud. Since we published the article, however, many new models have been introduced, and prices continue to drop. To bring you up-to-date, we're working on another modem buyers' guide. Look for it in our June issue. —Ed.

PageMaker's Missing Links

In your January article on desktop publishing ["Road Test: Desktop Publishing"], road tester Sheila Brown was mistaken in saying that elements cannot be tied together in *PageMaker*. The program offers at least two ways to link text with graphic elements. Clicking on individual elements while holding down the <Shift> key lets you group elements so you can move them as a unit. You can also group elements by "lassoing" them within a box. These are just two of the many features that earn *PageMaker* high scores in my book, too.

David Silla
Concord, North Carolina

AST's Color Portable

In response to the preview of AST's Premium Exec 386SX/25C in your January issue ["Color and Light: The New Color Notebooks"], I'd like to clarify a point. The writer states the screen performed well, but warns that the shipping system might not have the same screen as the prototype he tested. Due to pending negotiations, AST could not name its screen vendor at the time your magazine went to press. However, we will indeed be shipping the same color screen that you previewed in our prototype units.

Bret Berg
Product Manager, Portable Systems
AST Research, Inc.

A Tip for DOS Tips

I ran into some trouble with Tip 47 in the January issue's "50 Tips for DOS and Windows." After trying to use the PROMPT command to program my function keys, I discovered that PROMPT key definition works only if the command line is displayed on screen. I use ECHO OFF at the beginning of my AUTOEXEC.BAT file, so I inserted an ECHO ON command before the PROMPT function key redefinition command. I then enter PROMPT PG (my prompt line configuration) on the next line. Figuring this out cost me a lot of time and a little sanity.

Mick Bernardo
Springfield, Pennsylvania

Avagio: Accenting the Positive

Deke McClelland's article "No-Sweat Desktop Publishing" [January] does a disservice to our program *Avagio*. His review contains outright errors and focuses on negative aspects of the program while disregarding the positive.

Big Screen for Windows

COMDEX® BOOTH #652E

No question... this 17-inch monitor from ViewSonic is the ideal "big screen" choice for Windows. In fact, in a recent InfoWorld product comparison, the ViewSonic 7 was rated #1. Our monitor was designed for people who know what they want and won't accept second best.

The competition claims we're unfair. That's because the up-graded ViewSonic 7, with resolution up to 1280 x 1024, features microprocessor-based memory along with 26 programmable preset modes. And it has a flat square, anti-static screen to eliminate distortion and provide a sharp to-the-edge picture. Plus, for a flicker-free image, it boasts of ultra-high 76Hz refresh rate. This monitor even meets low-radiation strict Swedish MPR-2 standards!

ViewSonic 7—the ideal 17" big screen monitor for the full-scale Windows environment.

ViewSonic®

12130 Mora Drive/Santa Fe Springs, CA 90670
(800) 888-8583 (310) 946-0711 FAX (310) 946-1618

All products and brand names are trademarks of their respective companies.

Circle 300 on reader service card

First he states that *Avagio*'s font support is "the weakest in the roundup." This is absolutely wrong. *Avagio*'s outline fonts are fully scalable from 4 to 500 points (5½ inches) in 1-point increments. Because of the outline font technology, not only can font size, typeface, and special effects be changed instantly, there is also no loss of quality at any point size. Also, none of the other products can match *Avagio*'s capability to rotate text and fit text to any shaped curve or object.

Second, McClelland focuses on *Avagio*'s speed. Granted, *Avagio* may not be the fastest program in the category, but considering all that it does, and especially considering the high quality of the output, this should not be the point on which to focus. High-quality output, after all, is *the* reason for desktop publishing. Surprisingly, the article never discusses output quality.

McClelland criticizes Unison World's technical support. At the time he wrote the article, we did have problems in this area due to the rapidly increasing demand for *Avagio*. These problems have since been corrected with the installation of a new phone system.

Finally, to compare DOS products to *Windows* products is absurd! These are completely different operating systems serving different needs. Contrary to what *PC World* seems to believe, not everybody uses a 486 running at 75 MHz with 16MB of RAM. I would like to see *Microsoft Publisher*, for instance, operate on a 286 machine with only 1MB of RAM. *Avagio* can.

David W. Chard
Division Marketing Manager
Unison World

We regret not spelling out that we faulted Avagio's *font-handling capability solely because of its lack of PostScript support and not because of any limitation in the scalable fonts that come bundled with* Avagio. *Our reasoning was that users of low-end desktop publishing programs may one day want to get output from a typesetting system or a PostScript printer, and that PostScript support is necessary in order to do that.*

Avagio *does sacrifice speed to make some high-end desktop publishing features available on low-end machines. We gave it four stars for its graphics and low price and three stars for page design and layout. We agree that the color output is spectacular. Readers can get samples of the output by writing to Attn:* PC World *Response, Unison World, 1321 Harbor Bay Pkwy., Alameda, CA 94501; 510/748-6670, 510/748-6964 (fax). —Ed.*

Partitioning Hard Disks

In the otherwise splendid sidebar "Organizing Your Hard Disk" in the December issue ["Buyers' Guide: Hard Disks"], the authors made a serious error when stating the largest partition

Get A Life

supported by DOS 2.*x* or 3.*x* is 32MB. Not true! MS-DOS 3.31 supports a single partition of more than 500MB.

I learned this the hard way. When I added a 124MB hard disk to my AT, I upgraded to MS-DOS 5.0 so I wouldn't have to partition the disk. Calamity! Several of my application files corrupted data for the first time. Only then did I learn Compaq dealers (and perhaps others) sell MS-DOS 3.31, which permits one partition on a large hard disk.

David T. Griffith, Jr.
Lake Arrowhead, California

You're right—Compaq's version of MS-DOS 3.31 supports large partitions. However, no one else's does. —Ed.

Hard Disks and Optimizers

The December hard disk buyers' guide says that some drives are not compatible with disk optimizing software. What hardware characteristic could make a disk drive inherently incompatible with software that merely copies data from one cluster to another?

Robert J. Sandler
New Milford, New Jersey

Some drives use unusual formatting with sectors laid down in a nonstandard way; six drives we listed don't work with optimizers. Check with the manufacturers for more details. —Ed.

More Fonts

Your January fonts buyers' guide passed over what I think is the best of the lot: *MoreFonts* and *MoreType,* sold by MicroLogic Software. *MoreFonts* offers a great selection of fonts at very reasonable prices, as well as the capability to create special effects. *MoreType* lets you convert fonts into formats compatible with PostScript Type 1, Agfa/Intellifont, Atech, and URW-GeoWorks. What more could you want?

Kenneth Beaudrie
Denver, Colorado

Presenting Hollywood

I always enjoy *PC World*'s articles and advice. But I beg to differ with your opinion that *Hollywood* is the best choice for business presentation graphics ["One-Touch Presentation Software," November 1991].

Both *Aldus Persuasion for Windows* and *Hollywood* let you easily switch between an outline and slide views. But if you change the size of text in *Hollywood*'s slide view, that change is reflected in the outline. For instance, if you increase the size of bullets on a slide, those large bullets stick out like sore thumbs in the outline. What a bother!

The product's other weakness is its vendor. With IBM's uncertain future, how stable can *Hollywood*'s future be?

Jack Kissner
Indianapolis, Indiana

Built for Graphics

Your preview of NEC's PowerMate Image computers in the November 1991

With A Lifeti

And Make The Most Of It. Hyundai is doing what no other PC manufacturer's ever done before. Now through June 30, 1992, when you buy a Hyundai 386, 486 desktop or notebook computer, you get a lifetime of value – and more.

During the life of this promotion, Hyundai offers you the industry's first lifetime warranty* absolutely free. Plus the opportunity to purchase leading software, software support and accessories – including Quattro® Pro 4.0, Harvard Graphics,® LAP2LAN,™ and even a year's subscription to Software Support – at savings of up to **$2500**.

Not only that, but Microsoft® Windows™ and MS-DOS® are bundled free with every 386 or 486 desktop computer. FastLynx software and MS-DOS come free with every Hyundai notebook.

To find out more about the opportunity of a lifetime, see your

*Lifetime warranty available to individual customers only. Commercial customers should inquire about Hyundai's free Lifetime Service Upgrade. Lifetime period is the time product is in possession of the original individual customer, or original Hyundai Electronics America for more details. Hyundai is a registered trademark of Hyundai Electronics Industries, Co., Ltd. Other company and product names may be trademarks or registered trademarks of the respective company with which

issue ["NEC's Twin Peaks: Hot PCs, Hot Monitors"] raises a very important point: optimizing computers for graphics-intensive programs. I think it's safe to say that almost all significant applications will be written for graphical environments, not DOS. Isn't running a graphical OS app on a box with no built-in component for speeding up redraws and other such functions akin to running a graphical OS app on a 286? It's critical that you address this capability in all your reviews of systems.

Charles Izevbigie
Tallahassee, Florida

Graduating to Harvard for Windows

In "Harvard Does Windows" [December 1991], you mentioned that *Harvard Graphics for Windows* will probably make *Windows* believers out of the program's DOS devotees. I'm an avid *Harvard Graphics 2.3* and *3.0* user, and I've found both to be huge assets in my business. However, version 3.0 has one disadvantage: its printing. The process is slow, especially when printing presentations. If *Harvard Windows* corrects this problem, I'm one DOS devotee ready to graduate to *Windows*.

Robin Bock
New Rochelle, New York

Corrections and Clarifications

In the December 1991 issue, we mislabeled the chart in "Organizing Your Hard Disk" in our hard disk buyers' guide. On page 229, all the subdirectories on the E: drive should have been labeled E:.

In January's *User Group Tips*, the listing for the batch screen blanker was wrong. The correct listing is as follows:

```
@ECHO OFF
CLS
PAUSE > NUL
EXIT
```

The sidebar on *Braincel* neural net software in January's *Spreadsheets (A..Z)* listed the wrong phone number for Promised Land Technologies. The correct numbers are 800/243-1806 and 203/562-7335. Also, the AST service number given in the February notebooks roundup ["20-MHz 386SX Notebooks: More Power to You"] is incorrect. The number should be 800/876-4278.

In the February "Special Report: Best Windows Software," the article "New Applications on the Horizon" gave an incorrect list price for the forthcoming *Ventura Publisher 4.0, Windows Edition*. The program's price is $795. *PC World* regrets the errors.

Send your reactions, responses, and ideas to Letters, PC World, *501 Second St. #600, San Francisco, CA 94107; PC World Online, Letters; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Include your name, city, state, and phone number. We reserve the right to edit letters.*

me Warranty.

authorized Hyundai dealer. While you're there, be sure to check out Hyundai's complete line of desktop and notebook computers – all backed by the world's 21st largest conglomerate.

With this lifetime warranty and great values on software and software support, you not only get the solutions you need today, you get security for tomorrow.

For the name of the participating Hyundai PC dealer nearest you, call **1-800-288-5726**. Hurry. While the warranty lasts a lifetime, the promotion ends June 30.

Personal Computers. A Lifetime Of Value.

HYUNDAI
Information Systems

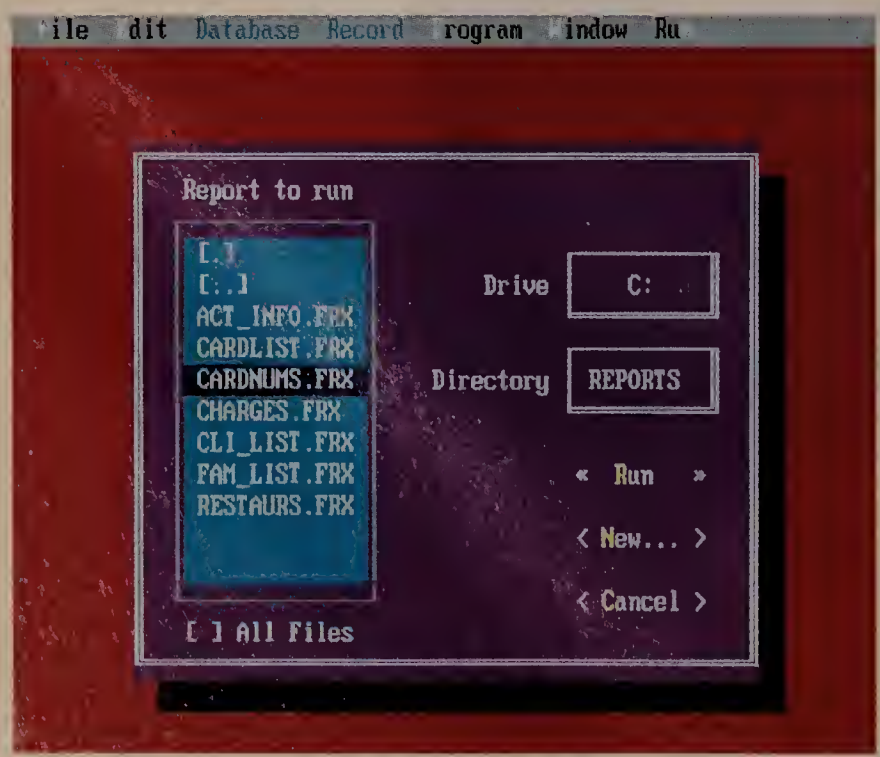
commercial user. Limited lifetime warranty, software and software support offers are only available at participating authorized Hyundai dealers during the promotional period. Some restrictions apply. Contact your participating Hyundai dealer or they are associated. ©1992 Hyundai Electronics America, Ltd.

Circle 106 on reader service card

See Fox *RUN*.

We've just added a new word to the database vocabulary: *RUN*.

And it can make you a master of your database management universe. Even if you've never managed a database before.



The most powerful PC DBMS available is now the easiest to use, too: FoxPro™ 2.0.

Pick *Run* from the FoxPro 2.0 main menu and you have instant access to your information. Click on *Report*, choose the name of the report you want, and it's yours. Do the same for queries, forms, labels and applications.

For answers on-the-fly, pick *RQBE* (Relational Query By Example) and get a simple interface for creating custom queries quickly and easily. Unlike other query systems, RQBE lets you browse the information or create instant databases, reports, labels, or business graphs (with optional FoxGraph or other graphic program).

Custom systems are easy, too.

You create quick reports, forms, labels and applications by clicking on the *New* button in the dialog box instead of picking a name from the list.

Then using our simple tools, you build forms containing buttons, lists, check boxes, text regions and data fields. Reports with headers, footers and

subtotals. And even complete applications.

All without any programming.

So while it's the most powerful DBMS you can get today, it's ideal for small businesses and large. In industry or government. For invoicing and inventory control, order entry and accounting, and all your data handling needs.

FoxPro is the state-of-the-database-art.

FoxPro 2.0 is the object-oriented, event-driven DBMS programmers have been waiting for, too.

We've added over 100 new and enhanced commands. 4GL (Fourth Generation Language) tools for creating screens, reports and menus as reusable application objects. And the ability to attach entry and exit procedures to fields, forms and windows for pre- and post-processing.

We've integrated SQL SELECT, UPDATE and CREATE TABLE into the language, with the ability to use RQBE for creating SELECT statements you just cut and paste into your application code.

We've added a project manager on top of our debugger, trace window, and editor.

We provide an Application Program Interface (API) that links to C or assembler function libraries (Library Construction Kit optional).

And we offer an optional Distribution Kit to distribute your applications royalty-free.

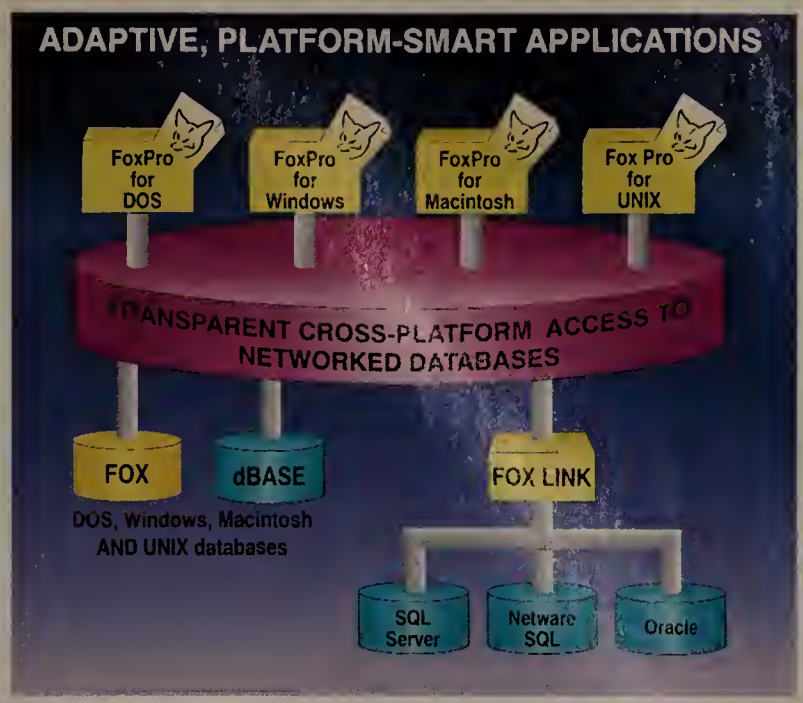
Today's best choice for upgrading or downsizing critical database applications.

FoxPro is devastatingly faster than competitive products (see chart† – the difference is even greater in single-user tests), and has out-queried even mainframe databases like Oracle, XBD and DB2, using our patent-pending Rushmore™ query optimization.

No one comes close to FoxPro's multi-user query response.

It's backward compatible with dBASE III+/IV and earlier versions of Fox software to protect your investments in hardware, software, training, and support.

And in the few months since its release, FoxPro 2.0 has swept the awards. Best DOS Application - *Spring COMDEX*. Technical Excellence -*PC*. Award of Excellence -*Byte*. Best DBMS -*Data Based Advisor*. And many, many others from both editors and users of FoxPro 2.0.



Applications developed today with FoxPro for DOS, unlike other databases, will be able to run under Windows and SCO/UNIX and on the Macintosh when we release our new versions of FoxPro later this year.

Get a headstart on tomorrow today.

Today, FoxPro exchanges data with FoxBASE+ on Macs and on PCs running SCO UNIX. Later this year, FoxPro will be available for Windows, UNIX, and the Mac, all with access to Netware SQL, SQL Server, and Oracle databases.

And applications written using FoxPro's 4GL tools will be platform-adaptive, so DOS or Windows applications will run on UNIX or the Macintosh, and vice-versa.

Which means you can get a headstart on your future by starting your Windows, Mac or UNIX development now with FoxPro on your current DOS PCs.

It comes with a 60-day money-back guarantee.

So pick up a copy of FoxPro 2.0 at your nearest computer or software store. Try it out for 60 days, then if you don't like it, just return it to your dealer for a full refund.

But we think you'll agree with Byte magazine in their 1/92 review of dBASE: "...FoxPro is the better product."

Call 1-800-837-FOX2 today.
(419-874-0162 from Canada)
Ask for Lit Pak PCD401

†Query benchmark tests performed by Micro Endeavors, Inc. (215) 449-4680, from Data Based Advisor 8/91. Upgrade offer is for FoxPro Single-User version only.

FoxPro, FoxBASE+ and FoxBASE+/Mac are trademarks of Fox Holdings Inc.; other products are not. © Fox Holdings Inc. 1992.

Circle 76 on reader service card

Another state-of-the-art Laser Beam Printer from the people who perfected the art.

Canon takes Laser Beam Printing another step further with the new Canon LBP®-4 PLUS. This amazing printer offers superb Automatic Image Refinement, and gives you the option of genuine Adobe® PostScript.®

But then, Canon has always been at the forefront of Laser Beam Printing technology.

Our replaceable cartridge helped make Laser Beam Printers compact and virtually maintenance-free. Built-in scalable fonts offered greater flexibility.

And now, Automatic Image Refinement in the new LBP-4 PLUS and LBP®-8 Mark III PLUS automatically smooths out jagged edges and curves to perfect all your printouts—from text to graphics. And Adobe PostScript lets you print all your PostScript files.

Call 1 (800) 848-4123 for information on our complete line of Laser Beam Printers. And let the people who perfected the art improve *your* image.

Canon
LASER BEAM PRINTERS
Working To Improve Your Image.™

POSTSCRIPT
Software From Adobe

Adobe,® PostScript® and the PostScript logo are registered trademarks of Adobe Systems Inc. in the U.S.A. Canon® and LBP® are registered trademarks and Mark III T and Mark III R are trademarks of Canon Inc. © 1991 Canon U.S.A., Inc.

Come see us at COMDEX booth # 1605

Circle 50 on reader service card

THE HELP SCREEN

PC World offers answers and advice at every level

Karl Koessel and Robert Lauriston

Moving Data From WordPerfect to dBASE

Q. *I have a large amount of information in* WordPerfect *files and would like to convert the data to* dBASE *format without retyping. Is there some way to do this?*

Arnold Van Pelt
Greensboro, North Carolina

A. You can convert the *WordPerfect* data into comma-delimited text, then import it into *dBASE* (or almost any other data base or spreadsheet). In a comma-delimited file, each field ends with a comma except for the last field of each record, which ends with a carriage return. If a field contains a comma, that field must be enclosed by double quotation marks to prevent the internal comma from being read as a field separator. Since there's no harm in putting double quotes around a field, it's safest to put them around every field. Consider the following addresses:

Ms. Holly Arbogast
Recovery Systems, Inc.
5165 Clearlake Dr., Dent, OH 45248

Mr. David Richards
329 Blue Earth St., Ackley, IA 50601

Converted to comma-delimited text, they would appear as shown in **FIGURE 1**. For your data to import properly, every record must have the same number of fields. Since the second record has no business name, we've inserted an empty pair of quotes as placeholders. When imported into *dBASE*, they will create a blank in the record's company-name field so subsequent values will be placed in the correct data base fields.

Make a copy of the *WordPerfect* file containing your data, and edit it (manually or by search-and-replace commands) to comma-delimited format. Then save the document as ASCII text without line breaks by selecting *Text in/out* (**<Ctrl>-<F5>**)•*Save As*•*Generic*). Fire up *dBASE*, open your data base file, and enter the command **APPEND FROM** *textfile* **DELIMITED WITH ",".**

Do Super-VGA Boards Need Super-VGA Monitors?

Q. *I'm thinking of buying a super-VGA board. If I do, will I have to buy a super-VGA monitor as well?*

Isaac Etrozier II
Washington, D.C.

A. You can run a standard VGA monitor off a super-VGA board, but you'll be able to run the board only at basic 640 by 480 VGA resolution. However, if your software supports 256 colors, you'll be able to display them all instead of being limited to standard VGA's 16.

To take full advantage of a super-VGA board, you need a super-VGA (also called *multiscan* or *multifrequency*) monitor capable of high-resolution 800 by 600 and 1024 by 768 modes. Note, however, that many people find the characters in high-res modes too small to read when displayed on a 14-inch monitor, so look closely before you buy.

Even if you don't need or want higher resolution or more colors, there's still another advantage to super VGA. Most super-VGA boards now allow you to run standard VGA with a 72-Hz vertical refresh rate. This means the screen is updated 72 times a second instead of the usual 60, eliminating perceptible flicker. If you find your eyes tired or sore after working at your computer, flicker-free VGA might help. You'll need a super-VGA monitor for this trick too.

Starting Windows With or Without a Mouse

Q. *I don't like to use a mouse with my notebook unless I have to, but since some programs demand a mouse, I bought a Logitech MouseMan. Unfortunately, when I start* Windows *with the mouse disconnected, my system crashes. Is there some way to make*

```
"Ms. Holly Arbogast","Recovery Systems, Inc.","5165 Clearlake Dr.","Dent","OH","45248"
"Mr. David Richards","","329 Blue Earth St.","Ackley","IA","50601"
```

ANTHONY RUSSO

FIGURE 1: Most data bases and spreadsheets can import comma-delimited text files, in which a record is one line, with fields separated by commas.

DON'T BUY A LAN!

If you want any or all of the following capabilities—and nothing more, don't spend a pile of money and add complications to your life by getting a LAN. Consider instead the **Systemizer® Plus** or the **Systemizer SC.**

- You can exchange electronic mail (E-Mail) with your co-workers, including automatic distribution and archiving of memos. Even conduct on-screen discussions with co-workers.
- You can electronically transfer files between your PC's hard disk and co-workers' hard disks.
- Instead of being limited to just one printer you can access every printer in the office. Use a laser printer for word processing, a wide-carriage line printer for reports, and a color plotter or printer for graphic presentations.
- Your computer will no longer be tied up during the entire printing process, so you can get your work done faster. You can also reprint multiple collated copies of previously printed documents, independent of your PC and without having to use a copier.
- Select fonts, paper sizes and other printer options right from your desk.
- Access a remote modem and FAX machine from your PC.
- You and your co-workers can share access to a centralized hard-disk for storing boilerplate documents, drawings, reference files, etc.

All of the above can be yours for only 18¢ to 36¢ per day* per user. No server, no technicians, no maintenance needed. Join the 100,000+ users who benefit from our connectivity solutions, ranging from printer sharing to full-blown networking. Call for details about receiving a no-risk evaluation package and the name of your nearest dealer. Available on government GSA, too.

CONNEXPERTS®
The connectivity experts...

800-433-5373

*$199 to $399 MSRP depreciated over 3 years. Trademarks & ©1991 by Applied Creative Technology Inc.

Circle 37 on reader service card

Windows *run whether I have my mouse installed or not?*

Matthew B. Gerhardt
El Cerrito, California

A. *Windows* shouldn't crash just because your mouse isn't plugged in. Call Logitech and ask if it will provide a new driver that won't cause this problem. Meanwhile, make two copies of *Windows'* SYSTEM.INI file, one configured for the MouseMan and one for no mouse, then use a batch file to pick the right one when you start *Windows*.

From the DOS prompt, change to your *Windows* directory. Enter **COPY SYSTEM.INI *.SAV** to save a backup copy of SYSTEM.INI. Enter **COPY SYSTEM.INI *.YM** to make a copy of SYSTEM.INI for the batch file to use when you have your mouse attached. Enter **SETUP** to run *Windows'* Setup utility. Move the cursor to highlight the Mouse entry, press **<Enter>**, cursor down to select *No mouse or other pointing device*, press **<Enter>** twice, and complete the mouseless configuration. Then enter **COPY SYSTEM.INI *.NM** to copy the newly modified SYSTEM.INI to SYSTEM.NM.

Next, type the batch file commands shown in **LISTING 1** into *Windows'* Notepad (or any other text editor). Save the file as WINMOUSE.BAT in your *Windows* directory. From now on, enter **WINMOUSE Y** to start *Windows* when your mouse is attached and **WINMOUSE N** when it isn't. You can add the usual parameters after the *Y* or *N* if you want *Windows* to start an application or run in a specific mode. Note that until you get a new mouse driver, you'll have to repeat these steps to update all your SYSTEM.INI copies if you modify your *Windows* setup.

Digital Magnifying Glass

Q. *I have a friend with extreme vision loss due to multiple sclerosis. Is there a program that enlarges the characters on a monitor and works with* WordPerfect, 1-2-3, *and other DOS-based character applications?*

Susan Dick
Roseau, Minnesota

A. We found several programs that enlarge screen text, and a source for braille printers. On a graphics monitor, *1-2-3 2.3* and later versions can enlarge screen text 400 percent through Wysiwyg's :Display Zoom Manual command.

WHERE TO BUY

B-Pop, Big for WordPerfect
Hexagon Products
P.O. Box 1295
Park Ridge, IL 60068
708/692-3355
LIST PRICE: $27, $39
Reader service no. 824

LP-DOS 5.0
Optelec U.S., Inc.
P.O. Box 729
4 Lyberty Way
Westford, MA 01886
508/392-0707, 508/692-6073 (fax)
LIST PRICE: $495
Reader service no. 826

MAGic, MAGic Deluxe
Microsystems Software, Inc.
600 Worcester Rd.

```
@ECHO OFF
FOR %%A IN (Y y N n) DO IF %1*==%%A* GOTO OK
ECHO Enter WINMOUSE Y to use Windows with a mouse,
ECHO or WINMOUSE N to use Windows without a mouse.
GOTO END
:OK
COPY C:\WINDOWS\SYSTEM.%1M C:\WINDOWS\*.INI
WIN %2 %3
:END
```

LISTING 1: For users who sometimes do and sometimes don't have a mouse attached to their system, this batch file, WINMOUSE.BAT, replaces SYSTEM.INI with an appropriately configured version before starting Windows.

Make the Smart Choice in LaserJet PostScript Language Emulation Cartridges

	Pacific Data Products		Hewlett-Packard
	PacificPage PE™	PacificPage XL™	PostScript Cartridge
Suggested list price including 2 MB memory	$579★	$899	$1085
Time to output Ventura Scoop	2 minutes 23 seconds	39 seconds	2 minutes 54 seconds
60-day Money-back guarantee	Yes	Yes	No
PostScript to PCL switching	Yes	Yes	No
Upgrade program	Yes	Yes	No
Warranty	Lifetime	Lifetime	One year

★ Suggested list price of PacificPage P•E cartridge without a 2 MB memory board is only $399.

"PacificPage swiftly and accurately renders some test EPS files that other interpreters distort, and had no trouble with any of the large and complex images I used for testing."

"An Intel i960™ RISC processor on the accelerator board helps the PacificPage XL print graphics more than six times as fast as the HP PostScript Cartridge"

Edward Mendelson
PC Magazine, (June 25, 1991)

Don't settle for less just to buy the Hewlett-Packard name. Ask for PacificPage PostScript® language emulation solutions from Pacific Data Products. You'll get a lot more, for a lot less.

Each PacificPage product for LaserJet® II, IIP, IIP Plus, IID*, III, IIID, and IIIP printers is guaranteed to be completely compatible with all of your PostScript output. If you can create it, PacificPage can print it. If not, we'll give you your money back.

Choose from PacificPage PE or PacificPage II (ver. 5.0), our fastest stand-alone cartridges ever. Or PacificPage PE/XL and II/XL which combine the PacificPage cartridges with a RISC-based accelerator board. Just slip the board into the LaserJet memory slot and you'll experience an incredible increase in printing speed. If you purchase one of the PacificPage cartridges alone and find that your printing applications demand even greater speed, simply upgrade to the XL version.

Why not get more for less?

Buy a PacificPage cartridge and save more than $500 over Hewlett-Packard. Or, save close to $200 over Hewlett-Packard with an XL version and amaze yourself with its speed. Make the smart choice. Choose PacificPage.

For more information call your nearest dealer or contact Pacific Data Products, 9125 Rehco Road, San Diego, CA 92121, USA. (619) 597-4666, Fax (619) 552-0889.

PACIFIC DATA PRODUCTS

*The XL versions of PacificPage are not compatible with the LaserJet model IID. Prices listed are manufacturer's suggested retail list price as of 2-4-92. Quotes reprinted from PC Magazine June 25, 1991. ©1991, Ziff Communications Company. PacificPage II, PacificPage P•E, PacificPage II/XL, and PacificPage PE/XL are trademarks of Pacific Data Products, Inc. PostScript is a registered trademark of Adobe Systems Incorporated. HP and LaserJet are registered trademarks of Hewlett-Packard Company. i960 is a trademark of Intel Corporation. PhoenixPage is a registered trademark of Phoenix Technologies Ltd. ©1987, 1988 Phoenix Technologies Ltd. ©1992 Pacific Data Products, Inc. **EUROPEAN OFFICES:** Geneva Tel (41) 22 41 26 50, Fax (41) 22 41 06 82, France Tel (33) 1 39 23 20 00, Fax (33) 1 39 63 31 20, U.K. Tel (44) 42 231414, Fax (44) 442 23 65 40

PhoenixPage

Framingham, MA 01701
508/879-9000, 508/875-8009 (BBS)
LIST PRICE: $79, $295
Reader service no. 827

Romeo Braille Embosser
Enabling Technologies Co.
3102 S.E. Jay St.
Stuart, FL 34997
407/283-4817, 407/220-2920 (fax)
LIST PRICE: 20 cps $2995, 40 cps $3795
Reader service no. 825

ZoomText, ZoomText Plus
AI Squared
1463 Hearst Dr. NE
Atlanta, GA 30319
404/233-7065, 404/233-7059 (fax)
LIST PRICE: $495, $595
Reader service no. 828

For more information about all products in this section, circle reader service no. 906.

Hard Drive Upgrades for Low-End PS/2s

Q. *I have an IBM PS/2 Model 25 with two floppies. I'd like to install a hard drive, but IBM offers only an internal 20MB drive. I'd like at least 40MB, maybe more. Are such drives available from other companies?*

Scott Gammill
Shreveport, Louisiana

A. Hard drive upgrades for the Model 25 are hard to find, it's true. Here are a couple that do offer them. Both of these companies have products for the Model 30 as well.

WHERE TO BUY

Plus Hardcard 40
Quantum Corp.
500 McCarthy Blvd.
Milpitas, CA 95035
800/624-5545
LIST PRICE: $849
Reader service no. 829

hard drives for Model 25 or 30
jb Technologies, Inc.
5105 Maureen Ln.
Moorpark, CA 93021
800/688-0908, 805/529-0908
LIST PRICE: 40MB $229, 80MB $379, 100MB $475, 200MB $795
Reader service no. 830

Track Baseball Statistics

Q. *I keep the stats of a baseball team. I know there are programs to aid in this task, but I have searched everywhere without luck. Can you help me?*

Félix M. Ríos
Sabana Seca, Puerto Rico

A. Baseball statistics–tracking utilities seem to be very popular. We found no less than five shareware baseball stat programs in the Sports & Chance library of CompuServe's IBMNEW forum, plus a couple of softball stat counterparts and a spreadsheet template. If you don't have access to CompuServe and can't find any of these on your local BBS, several are available by mail. We also found five commercial programs. Many of these companies sell stat programs for other sports too.

1991 PC WORLD ANNUAL INDEX

Need fast answers from back issues of *PC World*? Can't find that review of the hottest 386 notebooks? With *PC World*'s 1991 index of articles you'll have all the reviews, products, features, and how-to's at your fingertips in one easy-to-use reference. A hard copy of the index is available, as are 5 1/4-inch and 3 1/2-inch disks, which feature a Hypertext interface to locate entries quickly.

To order, fill out and mail the coupon at right. Enclose personal checks only; do not send cash. Or fax your order to *PC World*, Attn: Scott Danish, at (415) 882-0936. Please allow 3-4 weeks for delivery.

PC WORLD ORDER NOW!

1991 ANNUAL INDEX
PC World, P.O. Box 77436, San Francisco, CA 94107-0436

Please send the 1991 PC World Annual Index to:

Name _____

Company _____

Street _____

City _____ State _____ ZIP _____

_____ printed copies @ $2.97 each $_____
_____ 5 1/4-inch disks or
_____ 3 1/2-inch disks @ $3.22 each $_____

Save by ordering a set (hard copy and 5 1/4-inch or 3 1/2-inch disk)
_____ set(s) @ $5.00 per set $_____
Check one: ____ 5 1/4-inch disk ____ 3 1/2-inch
Total $_____

WHERE TO BUY

Baseball League Statistics
Mighty Byte Computer, Inc.
Twin Forks Office Park
6040A Six Forks Rd. #223
Raleigh, NC 27609
800/237-7072, 919/846-0345, 919/676-0500 (fax)
LIST PRICE: $40 (commercial)
Reader service no. 831

The Baseball Statbook
RJL Systems
106 New Haven Ave.
Milford, CT 06460
203/878-0376
LIST PRICE: $69 (commercial)
Reader service no. 832

Baseball Statistical Manager 2.95
Caboose Software Engineering
2921 Bluff Point Ln.
Silver Spring, MD 20906
301/460-1437
LIST PRICE: $25 (shareware)
Reader service no. 833

Baseball Statpak 4.0
Federal Hill Software
3722 Greenway Ln.
Owings Mills, MD 21117
410/356-5592
LIST PRICE: $30 (shareware)
Reader service no. 834

Complete Team Series
Score Book Software
P.O. Box 3677
Estes Park, CO 80517
303/586-8726
LIST PRICE: $125 (commercial)
Reader service no. 835

File Clerk Baseball
Landrum Software, Inc.
P.O. Box 842
Palm City, FL 34990
407/286-1324, 407/220-1218 (fax)
LIST PRICE: $79 (commercial)
Reader service no. 836

Stats Pack
All American SportsWare
90 High St.
Newtown, PA 18940-1450
215/860-8535
LIST PRICE: $59 (commercial)
Reader service no. 838

For more information about all products in this section, circle reader service no. 907.

Out of Environment Space in NetWare

Q. *My PC is part of a Novell network. When I turn it on, I get a message saying 'Insufficient space in DOS environment to add new search mapping'. Do I have too many items in my PATH statement, or is there a way to give the DOS environment more space?*

Mary Bonnell
Ashton, Illinois

A. The *environment* is a small portion of memory where DOS stores the current PATH and prompt definitions and other variable information. Applications can use the environment, too—for instance, *Windows* uses it to store the location of its temporary files, and NetWare uses it to store drive mappings. (To see what's in your environment, enter **SET** at a DOS prompt.)

The error message you're getting indicates your AUTOEXEC.BAT file or NetWare log-in script has filled the

Q.

"Where Do I Turn For More Information?"

A.

1. Turn to the Reader Service Card at the back of this issue of *PC World*.
2. Find the Reader Service number of the product you want in the product or advertiser indexes.
3. Circle the number, fill out the postage-paid card and send it in. It's that simple.

In return, our advertisers will send you more information on the products you want. It's just another way that *PC World* helps you make the best buying decisions for your company.

PC WORLD

IF IT HAS ADOBE* SCALABLE FONTS, COLOR, AND QUIET TECHNOLOGY,

IT CAN ONLY BE FROM PANASONIC.

The KX-P2124, a 24-pin with ATM and color option.*

A few dot-matrix printers offer you scalable fonts.

A few, color. But no other printer offers you scalable fonts...color...and Panasonic® Quiet Technology.

Put our KX-P2124 and 2123 to work and you'll get the flexibility of Adobe Type Manager® and scalable fonts...you'll add drama to your documents with our optional color kit...and you'll hear very little, indeed.

aa ATM®

Put any of our other Quiet Technology printers to work and you can accomplish whatever your needs.

COLOR OPTION

From our 2123, a budget-minded 24-pin with Adobe Type Manager* and optional color...to our 2624 wide-carriage business printer with ATM*,...to our 9-pin 2180 with 6 near letter quality fonts and optional color.

All with the kind of features that made Panasonic printers the leaders of the industry. Such as multiple paper paths, EZ™ Set control panels, and a two-year limited warranty on parts and labor†.

The Panasonic 2000 Series Quiet Technology Printers.

Call us for more information: 1-800-742-8086. Or visit your Panasonic dealer.

†See your dealer for warranty details.

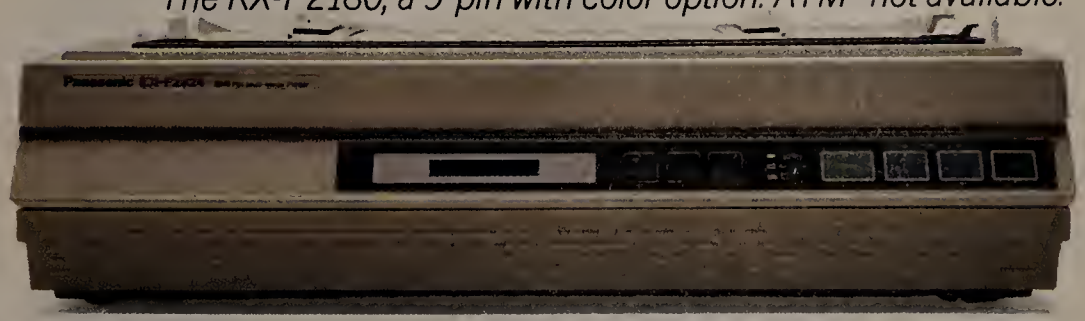
*ATM and Adobe Type Manager are registered trademarks of Adobe. Available on selected printers only.

Panasonic Office Automation OA

ONCE YOU'VE TRIED OUR QUIET TECHNOLOGY PRINTERS, YOU'LL NEVER SETTLE FOR ANYTHING LESS.

The KX-P2123, a 24-pin with ATM and color option.*

The KX-P2180, a 9-pin with color option. ATM not available.*



The KX-P2624, a 24-pin with ATM. Color option not available.*

PQ9-PCD

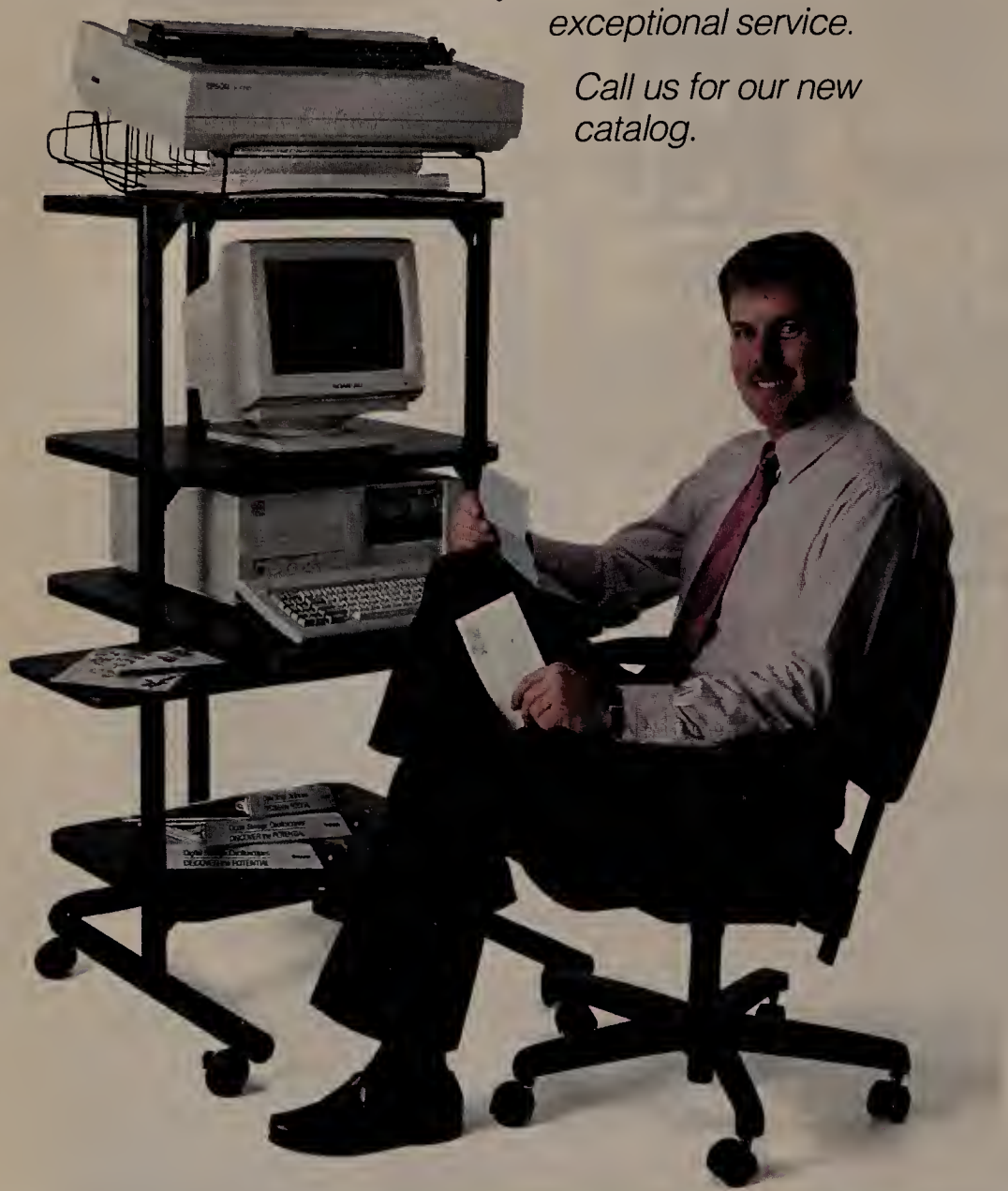
Circle 231 on reader service card

AnthroCart®

The best furniture you can buy for your equipment. Incredibly strong. Mobile. Flexible. Space saving. Lifetime warranty.

Choose different sizes and colors. Add the accessories you want. Discover Anthro's exceptional service.

Call us for our new catalog.



Free Catalog:
800-325-3841
6:30 AM to 5:00 PM PST

ANTHRO®
Technology Furniture®
3221 N.W. Yeon St.
Portland, OR 97210
(503)241-7113
Fax: (503)241-1619

GSA contract No. GS-00F-5040A
Available for OEM applications
Made in USA
Prices start from $159
We ship in 48 hours

Anthro, AnthroCart and *Technology Furniture* are registered trademarks of Anthro.

available environment space, so NetWare can't add all the search mappings you and your network supervisor have defined. To expand the environment from its conservative default of 256 bytes, add a SHELL command to CONFIG.SYS and reboot. For example, **SHELL=C:\DOS\COMMAND.COM /E:1024 /P** would increase environment space to 1K. You can make the environment as large as 32K (/E:32768), but there's no reason to make it larger than necessary.

Print Selected Pages in WordPerfect Redux

Several readers wrote to tell us our September tip on printing odd and even pages in *WordPerfect 5.1* didn't work for them. It turns out that in early releases of the program, this feature didn't work with all printers. If it doesn't work for you, check the date in the upper right corner of the main Help screen. If it's '3/30/90' or earlier, call WordPerfect and request a free update.

Problems Running DOS 4.0

We still get quite a few questions every month regarding unusual problems with DOS 4.*x*—disk errors, memory problems, strange files appearing in the DOS directory, apps that run fine under DOS 3.3 behaving oddly under DOS 4.*x*, and so on. In most cases, our recommendation is the same: Upgrade to DOS 5.0. That should solve most problems. If the problem persists, write to us.

Send your questions to Robert Lauriston, PC World Online, Help Screen; CompuServe 73707,1731; MCI Mail 381-7106; Internet duck@well.sf.ca.us; or 415/442-1891 (fax); or mail them to The Help Screen, PC World, *501 Second St. #600, San Francisco, CA 94107.* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.* ●

Karl Koessel is the technical editor and Robert Lauriston a contributing editor for PC World.

This "Ultimate-Power Desktop PC" was chosen Editors' Choice.

Here's why.

MAGAZINE
EDITOR'S
CHOICE
-11-92

PC Magazine calls it "the ultimate-power desktop PC." What will you call your new *ZEOS '486 Editors' Choice* system? Probably the hottest computer you've ever owned! And that's just for starters.

Because never before has so much value been available for so little money. We call it *ZEOS Value.* Starting with the incomparable ZEOS 386-33 right up thru our two new 486-50s, ZEOS gives you more for your money than anyone else.

ZEOS-486-33 PC MAGAZINE EDITORS' CHOICE 2-11-92

ZEOS. Nine times Editors' Choice. Your Best Choice as Well!

486-25EISA PC MAGAZINE EDITORS' CHOICE 6-25-91

486-33EISA PC MAGAZINE EDITORS' CHOICE 4-16-91

Notebook 286 PC MAGAZINE EDITORS' CHOICE 3-12-91

386-33 PC MAGAZINE EDITORS' CHOICE 1-15-91

386SX-16 PC MAGAZINE EDITORS' CHOICE 1-30-90

386-20 PC MAGAZINE EDITORS' CHOICE 5-30-89

386-16 PC MAGAZINE EDITORS' CHOICE 5-30-89

386-16FS PC MAGAZINE EDITORS' CHOICE 2-28-89

Upgradable.

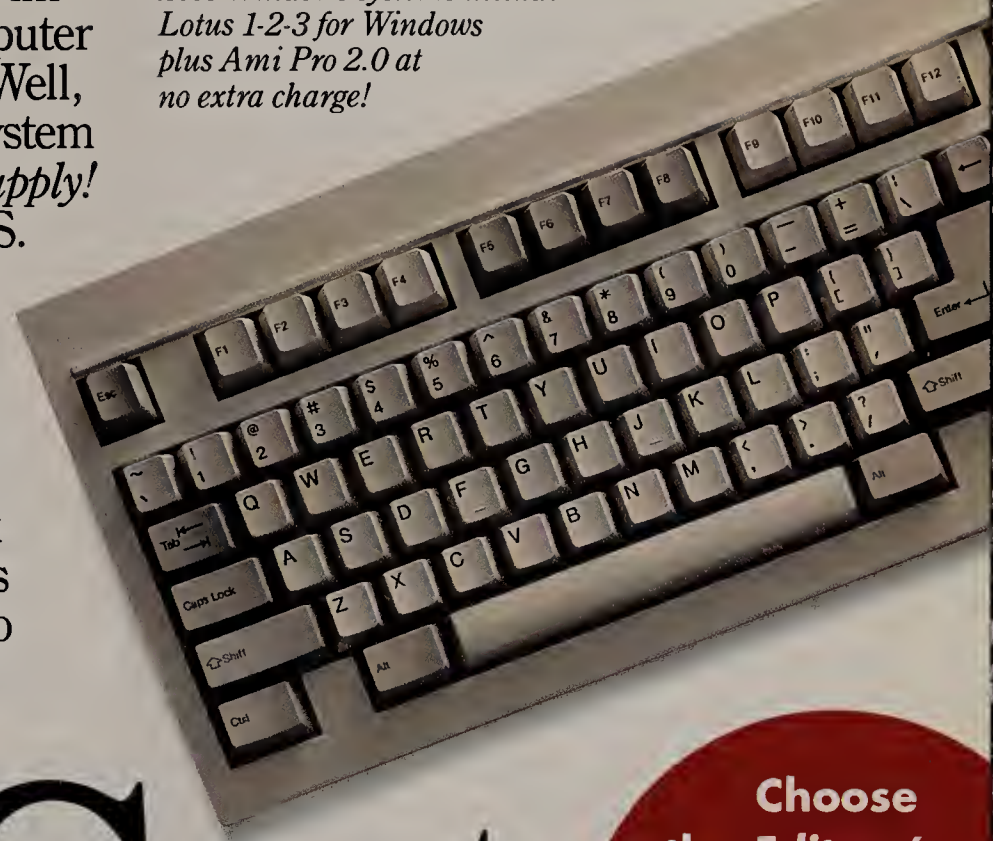
First of all, our prices are great! You can get a ZEOS 386-33 upgradable for as little as $1,395. Or you can move right into a *complete 486DX2-50MHz for only $1,995.* Outrageous! And it's not just the price. It's all the extras we give you, too.

As an example, your new ZEOS Windows system comes complete with *Lotus 1-2-3 for Windows* and *Ami Pro 2.0 for Windows.* These are not trial copies or sample discs, they are full blown, fully documented production packages. And, with a suggested retail of over $1,000, even at "street prices" that's a *great* value. It's ZEOS value. After all, ZEOS sets the pace for innovation and value for you in the direct marketing channel. Here's another good example.

You have probably heard about the importance of protecting your new computer investment with a surge suppressor. Well, your new ZEOS upgradable desktop system already has one. *Built into the power supply!* That's innovation, built in from ZEOS.

Your new ZEOS system really is unlike anything else you can buy. It's better. Whether it's performance, quality, compatibility, upgradability, expandability, reliability, safety or support—whatever it is that you look for in a system, ZEOS has it. Here's another innovation we introduced to the hardware industry.

Zeos Windows systems include Lotus 1-2-3 for Windows plus Ami Pro 2.0 at no extra charge!

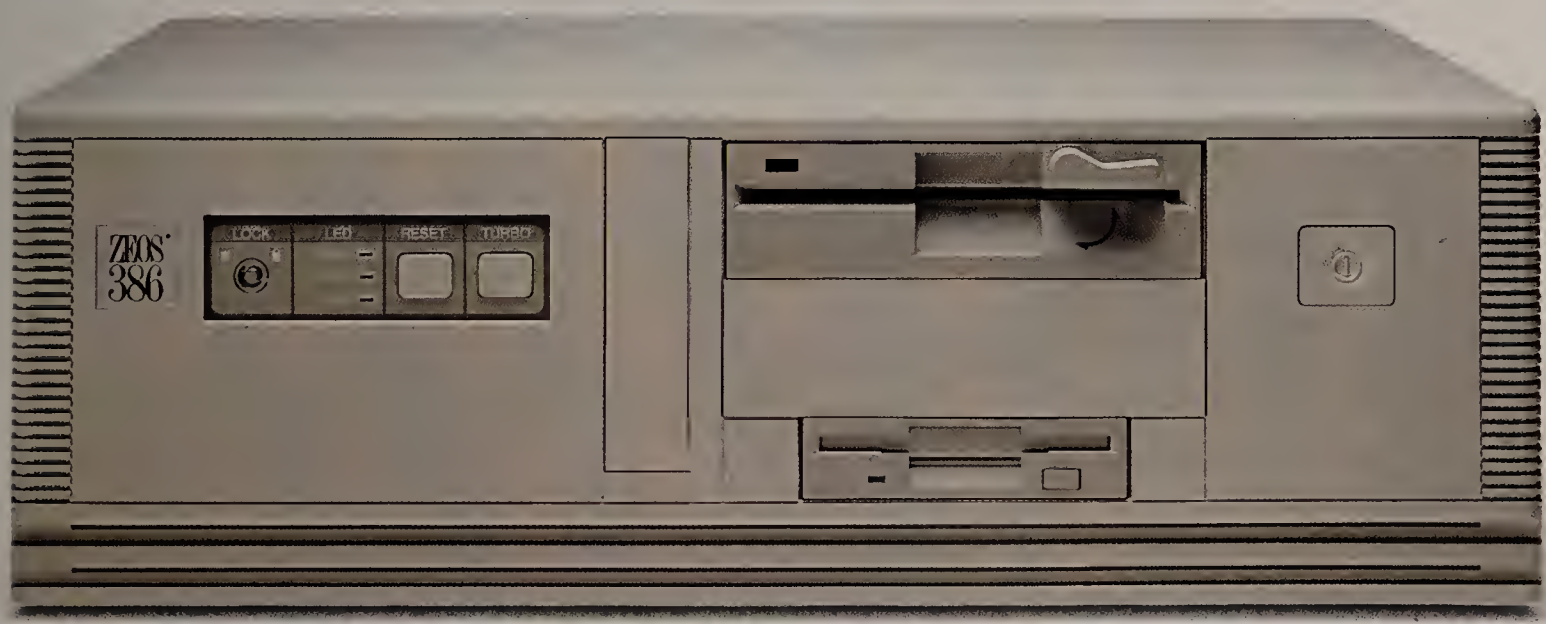


Low Cost.

Choose the *Editors' Choice* Upgradable. Now available as a 486-50!

24 Hour a Day Toll Free Technical Support. While most of the others still only offer part time technical support, as a ZEOS customer, you get around-the-clock 24 Hour a Day support, 365 days a year. Not that you'll need the help. But it's comforting to know if you do have a question, all you have to do is pick up the phone and give us a call, *anytime* of the day or night!

And all of this is just for starters. Because when you turn the page we're going to talk about a lot of other very exciting and important reasons for you to buy from ZEOS. Like 486SX-25s, the new 486DX2-50, your ZEOS *Editors' Choice '486* and more. A whole lot more. *Come on in!*



ZEOS.

ZEOS is the best computer for your money, no matter how much you spend. Why?

Because ZEOS delivers to you high performance, fully compatible systems with more quality and features than anyone else. Not only that but our after the sale support is second to none. And the prices? They're best described as incredible! It's no wonder PC Magazine has awarded ZEOS systems the coveted *Editors' Choice nine times.* Your new ZEOS Editors' Choice '486 is no exception.

After all, the ZEOS '486 upgradables are the hottest systems on the market today. *As PC Magazine says, "it's a lot of computer for a little cash."* And that's an understatement! No matter how much power you're looking for, ZEOS has it for you.

ZEOS COMPLETE SYSTEM PACKAGE #1

- The Processor and Speed of your choice plus future upgradability!
- 1MB of High Speed RAM, expandable to a system total of 32MB right on the motherboard.
- 42MB High Speed IDE hard drive with its own cache.
- 1.2MB or 1.44MB Teac® floppy drive.
- ZEOS 14" flat screen Hi-Res amber monitor with Tilt/Swivel Base.
- Shadow RAM and EMS support for enhanced performance.
- ZEOS/RS 101 key SpaceSaver keyboard.
- Two Serial, one Parallel & one Game Port built right onto the motherboard.
- 7-16, 1-8 bit expansion slots. 80387 math coprocessor support for '386 systems.
- Rugged ZEOS SpaceSaver case with twin cooling fans for added reliability and product life.
- Seven drive bays and our custom 300 Watt power supply with built-in surge suppressor!
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

PACKAGE #1	
486DX-50	$2195
486DX2-50	$1995
486DX-33	$1795
486SX-25	$1695
486SX-20	$1595
386-33	$1395

INCREDIBLE ZEOS PACKAGE #2

We take Package #1 and upgrade your ZEOS Modular System to include:

- 2 full Megabytes of Rip-roaring RAM.
- Our incredible 107MB IDE hard drive with its own built-in cache.
- Both the Teac® 1.2MB *and* 1.44MB floppy drives.
- Diamond SpeedStar Hi-Color VGA card/1MB RAM & Sierra DAC.
- ZEOS 14" High Res VGA Mono Monitor with Tilt & Swivel Base.
- Lotus 1-2-3 for Windows, *plus* Ami Pro 2.0, *plus* Microsoft Windows and DOS 5.0, *plus* a genuine Microsoft mouse!

PACKAGE #2	
486DX-50	$2695
486DX2-50	$2495
486DX-33	$2295
486SX-25	$2195
486SX-20	$2095
386-33	$1895

ANNOUNCING THREE HOT NEW PROCESSOR OPTIONS: '486SX-25, '486DX2-50 AND '486DX-50!

Go ahead and Pick your Power! ZEOS gives you all the options. You can start out by taking a look at the de facto desktop power standard, the 386DX-33. Our '386-33 workhorse is a great entry point for true desktop power computing. But if it's a '486 you're after. Hang on to your hat!

Because you're off to a fast start with a 486SX-20 or our brand new 486SX-25. The 486SX is like a 486DX without the built-in math coprocessor. It's the easiest way to own the '486. And for full blown 486*DX* power, why not opt for your

More Power.

own *Editors' Choice* system!

It's the ZEOS Editors' Choice 486DX-33. Quite simply, there is nothing else like it. *PC Magazine* said "the race toward 486 systems is faster than expected." One good reason for that is our *ZEOS Editors' Choice 486-33.* Go with the ZEOS '486 if you want the type of quality, performance and value that makes an *Editors' Choice* machine. And if it's *50MHz* you've been dreaming about, dream no more.

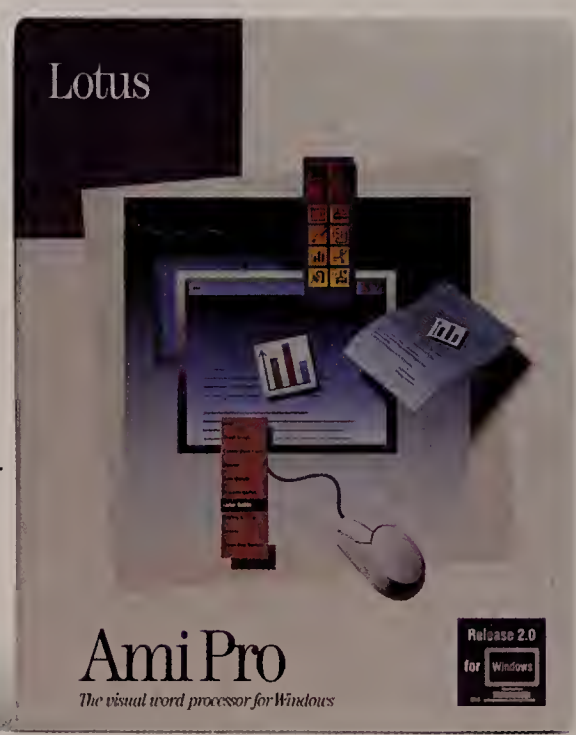
Because right here, right now, ZEOS gives you the option of '486 50MHz power! We're talking power unlike anything you've seen before. Take either the ZEOS 486DX2-50 or the 486DX-50. Absolutely unbelievable *performance!* And the price? That's what you really won't believe; only a couple hundred dollars more than the ZEOS 486-33. *Amazing.*

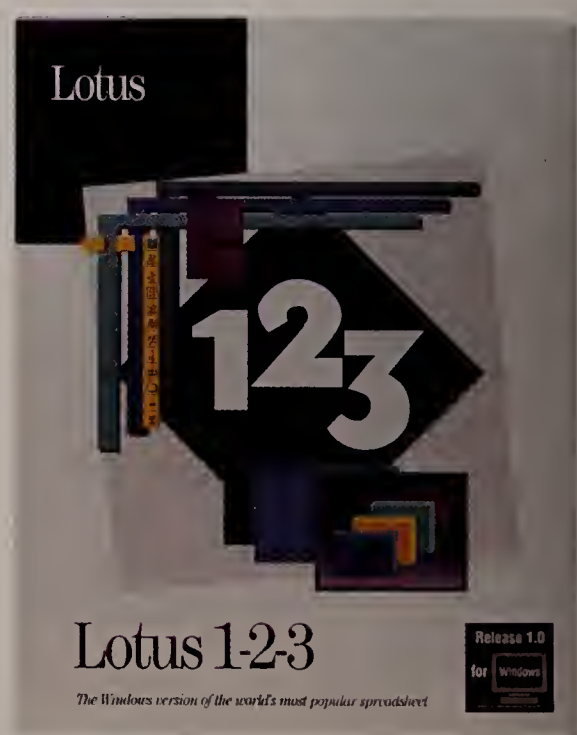
AND THAT'S JUST FOR STARTERS.

Because ZEOS combines the high speed upgradable processor of your choice with some of the fastest DRAM made. Both are mounted on your ZEOS system board, one of the most advanced in the industry. And that's where your new system really begins to shine.

Because to this we add an *incredibly fast* IDE hard drive and genuine Teac® floppy drives. We have located the ports for these drives right on the motherboard along with your serial, parallel and game ports. The result? Two slots are saved giving your new ZEOS system a total of *eight.* All this while others are trying to get you to accept fewer slots. It's part of your ZEOS expansion advantage. The slots to expand, how about the room?

This is where ZEOS has performed something akin to magic. We call it our SpaceSaver case. Complete with *seven* drive bays (six with the DX-50), this incredible case is actually smaller than many cases offering only five drive bays. Plus, we've also added a *second whisper quiet cooling fan.* Why? Because the cooler a system runs the longer it will last. Now





ZEOS. More Power.

ZEOS is the best computer for your money, no matter how much you spend. Why?

Because ZEOS delivers to you high performance, fully compatible systems with more quality and features than anyone else. Not only that but our after the sale support is second to none. And the prices? They're best described as incredible! It's no wonder PC Magazine has awarded ZEOS systems the coveted *Editors' Choice nine times.* Your new ZEOS Editors' Choice '486 is no exception.

After all, the ZEOS '486 upgradables are the hottest systems on the market today. *As PC Magazine says, "it's a lot of computer for a little cash."* And that's an understatement! No matter how much power you're looking for, ZEOS has it for you.

ANNOUNCING THREE HOT NEW PROCESSOR OPTIONS: '486SX-25, '486DX2-50 AND '486DX-50!

Go ahead and Pick your Power! ZEOS gives you all the options. You can start out by taking a look at the de facto desktop power standard, the 386DX-33. Our '386-33 workhorse is a great entry point for true desktop power computing. But if it's a '486 you're after. Hang on to your hat!

Because you're off to a fast start with a 486SX-20 or our brand new 486SX-25. The 486SX is like a 486DX without the built-in math coprocessor. It's the easiest way to own the '486. And for full blown 486*DX* power, why not opt for your own *Editors' Choice* system!

It's the ZEOS Editors' Choice 486DX-33. Quite simply, there is nothing else like it. *PC Magazine* said "the race toward 486 systems is faster than expected." One good reason for that is our *ZEOS Editors' Choice 486-33.* Go with the ZEOS '486 if you want the type of quality, performance and value that makes an *Editors' Choice* machine. And if it's *50MHz* you've been dreaming about, dream no more.

Because right here, right now, ZEOS gives you the option of '486 50MHz power! We're talking power unlike anything you've seen before. Take either the ZEOS 486DX2-50 or the 486DX-50. Absolutely unbelievable *performance!* And the price? That's what you really won't believe; only a couple hundred dollars more than the ZEOS 486-33. *Amazing.*

AND THAT'S JUST FOR STARTERS.

Because ZEOS combines the high speed upgradable processor of your choice with some of the fastest DRAM made. Both are mounted on your ZEOS system board, one of the most advanced in the industry. And that's where your new system really begins to shine.

Because to this we add an *incredibly fast* IDE hard drive and genuine Teac® floppy drives. We have located the ports for these drives right on the motherboard along with your serial, parallel and game ports. The result? Two slots are saved giving your new ZEOS system a total of *eight.* All this while others are trying to get you to accept fewer slots. It's part of your ZEOS expansion advantage. The slots to expand, how about the room?

This is where ZEOS has performed something akin to magic. We call it our SpaceSaver case. Complete with *seven* drive bays (six with the DX-50), this incredible case is actually smaller than many cases offering only five drive bays. Plus, we've also added a *second whisper quiet cooling fan.* Why? Because the cooler a system runs the longer it will last. Now that's ZEOS Value. Speaking of which, here's another industry first you will definitely benefit from.

ZEOS ANNOUNCES: BUILT IN SURGE SUPPRESSION!

Right now, ZEOS is proud to announce that we've taken our top-of-the-line *300 watt* supply and added a *built in surge suppressor.* Building the surge suppressor right into the power supply increases reliability and helps protect your investment. We wonder how long it will take for the rest of the industry to catch up. And while ZEOS is giving you critically important features like these, we add yet another.

UL® Listing! As *PC Magazine* said, UL Listing is "one of the few forms of peace of mind you can buy." Every ZEOS system is Underwriters Laboratories Listed. This means your entire system (not just the power supply) has met the stringent safety requirements of Underwriters Laboratories. Not only that but your ZEOS UL® listing says a lot about quality too. UL safety listings are something many of our competitors simply don't (or can't) provide you. At ZEOS quality and safety are important to us. *You are important to us!*

24-HOUR A DAY TOLL FREE TECHNICAL SUPPORT.

The importance of having you as a customer shows in many other ways as well. For example, at ZEOS we believe supporting *you* should be more than a part time proposition. As *PC Magazine* said, "Insist on a good service and support package. Expect…24-hour seven-day-a-week support." We've been saying that for years. In fact, it was ZEOS that invented *24 Hour a Day Toll Free Sales and Technical Support.* Our customers tell us they love it. And you will too. Any time you need assistance a ZEOS technician is only a phone call away.

With ZEOS you can have complete confidence in support, in your system and in the company as well. You can buy with confidence too because ZEOS is a strong and rapidly growing public company (NASDAQ NMS Symbol: ZEOS). In fact, *Fortune* magazine rated ZEOS as *America's Fastest Growing Company.*

Price, Performance. Quality and Support. There are *many* reasons to buy your new ZEOS system. All of them backed by your ZEOS Customer Satisfaction Package which includes our 30 Day Money Back Guarantee, One Full Year Limited Warranty and Express Parts Replacement Policy. How do you get one?

ORDERING IS EASY!

Ordering your new ZEOS system is indeed easy. Simply pick the Power and Package you want or let us custom build your new system to your exact specifications! Whatever you decide, a friendly and knowledgeable ZEOS Systems Consultant is waiting to assist you. And whatever you select, one thing is for certain.

Buying your new ZEOS system is perhaps the best purchase decision you'll ever make. So why not give us a call right now. You're going to be very satisfied. We don't just say it. We guarantee it! *Call Now Toll Free, 800-423-5891.*

Great Prices. Loaded!

For a limited time only, in addition to Microsoft® DOS 5.0, Windows and a MS mouse, every ZEOS Windows System also includes Lotus 1-2-3 for Windows plus Ami Pro 2.0 plus Adobe Type Manager. No additional charge! You're going to love it!

ZEOS COMPLETE SYSTEM PACKAGE #1

- The Processor and Speed of your choice plus future upgradability!
- 1MB of High Speed RAM, expandable to a system total of 32MB right on the motherboard.
- 42MB High Speed IDE hard drive with its own cache.
- 1.2MB or 1.44MB Teac® floppy drive.
- ZEOS 14" flat screen Hi-Res amber monitor with Tilt/Swivel Base.
- Shadow RAM and EMS support for enhanced performance.
- ZEOS/RS 101 key SpaceSaver keyboard.
- Two Serial, one Parallel & one Game Port built right onto the motherboard.
- 7-16, 1-8 bit expansion slots. 80387 math co-processor support for 386 systems.
- Rugged ZEOS SpaceSaver case with twin cooling fans for added reliability and product life.
- Seven drive bays and our custom 300 Watt power supply with built-in surge suppressor!
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

PACKAGE #1

486DX-50	$2195
486DX2-50	$1995
486DX-33	$1795
486SX-25	$1695
486SX-20	$1595
386-33	$1395

INCREDIBLE ZEOS PACKAGE #2

We take Package #1 and upgrade your ZEOS Modular System to include:

- 2 full Megabytes of Rip-roaring RAM.
- Our incredible 107MB IDE hard drive with its own built-in cache.
- Both the Teac® 1.2MB and 1.44MB floppy drives.
- Diamond SpeedStar Hi-Color VGA card/1MB RAM & Sierra DAC.
- ZEOS 14" High Res VGA Mono Monitor with Tilt & Swivel Base.
- Lotus 1-2-3 for Windows, plus Ami Pro 2.0, plus Microsoft Windows and DOS 5.0, plus a genuine Microsoft mouse!

PACKAGE #2

486DX-50	$2695
486DX2-50	$2495
486DX-33	$2295
486SX-25	$2195
486SX-20	$2095
386-33	$1895

INCREDIBLE ZEOS PACKAGE #3

Add even more memory, a larger drive. And more Savings! You now receive:

- 4 full Megabytes of Ultra High Speed RAM.
- Our fast 130MB IDE hard drive with built in cache.
- Teac® 1.2 & 1.44MB FDD'S!
- Diamond SpeedStar Hi-Color VGA card/1MB RAM (32,000+ colors)!
- ZEOS 14" 1024x768 Non-Interlaced VGA Color Monitor w/Tilt & Swivel.
- Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 plus a Microsoft mouse!

PACKAGE #3

486DX-50	$3195
486DX2-50	$2995
486DX-33	$2795
486SX-25	$2695
486SX-20	$2595
386-33	$2395

THE ULTIMATE ZEOS PACKAGE #4

Now, Memory goes to 8MB and the drive to 210MB. PC Magazine Editors' Choice as a 486DX-33 Vertical!

- 8 full Megabytes of High Speed RAM.
- Your screaming 210MB IDE hard drive with its own built-in cache.
- Teac® 1.2 & 1.44MB FDD'S!
- Diamond SpeedStar Hi-Color VGA card/1MB RAM (32,000+ colors)!
- ZEOS 14" 1024x768 Non-Interlaced VGA Color Monitor w/Tilt & Swivel.
- Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 plus a Microsoft mouse!

PACKAGE #4

486DX-50	$3695
486DX2-50	$3495
486DX-33	$3295
486SX-25	$3195
486SX-20	$3095
386-33	$2895

ORDER NOW TOLL FREE
800-423-5891

FAX Orders: 612-633-1325
Govt. & Educ.: 800-245-2449
Outside US and Canada Call: 612-633-6131
Hearing Impaired (TDD): 800-228-5389
MasterCard, VISA, Discover, Am Exp, Z-CARD, COD and Leasing Programs.
GSA00K91AGS5176
Open 24 Hours a Day, 365 Days a Year!

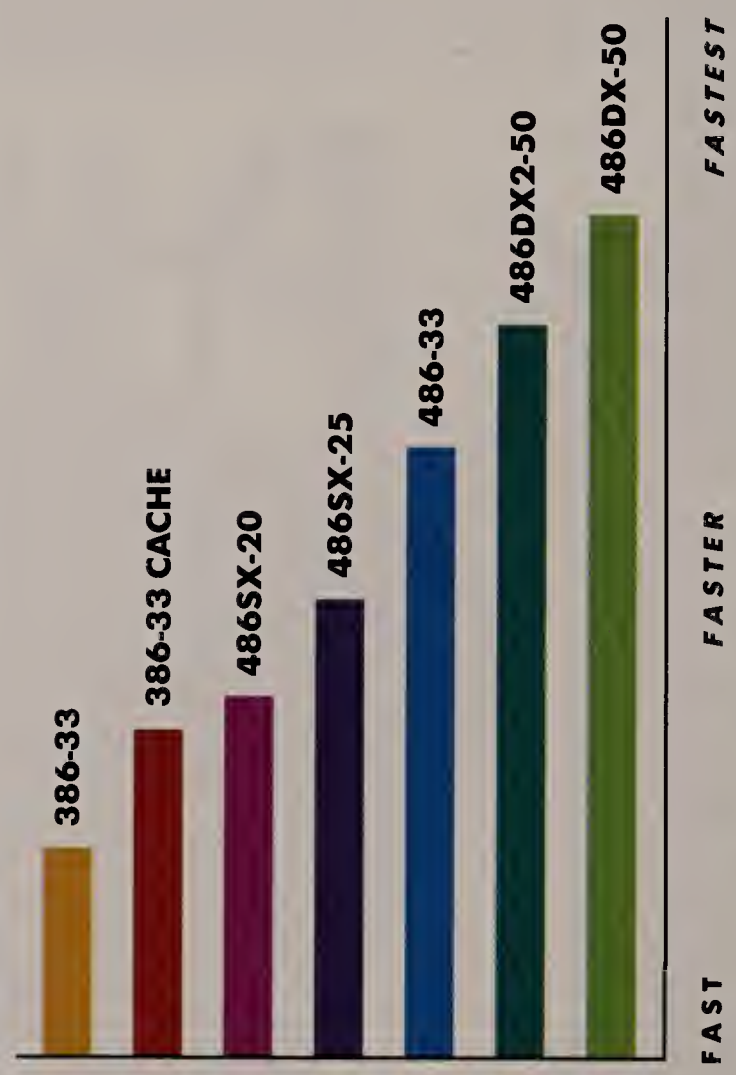
Pick Your Power!

Or Customize, Customize Customize! Just Tell Us and We'll Do It.

Now, ZEOS lets you pick exactly the power you want for the price you want to pay. Simply match the processor with the package configuration and you have your price. Or if you wish, we will custom build any system to your exact specifications.

And don't forget, with every ZEOS Windows System (packages 2, 3 and 4) you'll also receive Lotus *1-2-3 for Windows* plus Lotus' new word processor for Windows *Ami Pro 2.0.* The Lotus software alone carries a suggested retail of over $1,000 and even street prices are over $700. Yet we're giving it to you at *no additional charge!* That's ZEOS value.

No doubt about it. ZEOS has broken the price/performance barrier with these great new upgradables,



Z•SPEED GRAPHOMETER

Let the "Z-Graphometer" help you pick the processing power that's right for you. The comparisons are easy to make. Fast, Faster or Fastest!

ZEOS COMPLETE SYSTEM PACKAGE #1

- The Processor and Speed of your choice plus future upgradability!
- 1MB of High Speed RAM, expandable to a system total of 32MB right on the motherboard.
- 42MB High Speed IDE hard drive with its own cache.
- 1.2MB or 1.44MB Teac® floppy drive.
- ZEOS 14" flat screen Hi-Res amber monitor with Tilt/Swivel Base.
- Shadow RAM and EMS support for enhanced performance.
- ZEOS/RS 101 key SpaceSaver keyboard.
- Two Serial, one Parallel & one Game Port built right onto the motherboard.
- 7-16, 1-8 bit expansion slots. 80387 math co-processor support for '386 systems.
- Rugged ZEOS SpaceSaver case with twin cooling fans for added reliability and product life.
- Seven drive bays and our custom 300 Watt power supply with built-in surge suppressor!
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

INCREDIBLE ZEOS PACKAGE #2

We take Package #1 and upgrade your ZEOS Modular System to include:

- 2 full Megabytes of Rip-roaring RAM.
- Our incredible 107MB IDE hard drive with its own built-in cache.
- Both the Teac® 1.2MB *and* 1.44MB floppy drives.
- Diamond SpeedStar Hi-Color VGA card/1MB RAM & Sierra DAC.
- ZEOS 14" High Res VGA Mono Monitor with Tilt & Swivel Base.
- Lotus 1-2-3 for Windows, *plus* Ami Pro 2.0, *plus* Microsoft Windows and DOS 5.0, *plus* a genuine Microsoft mouse!

and you're the beneficiary. Incredible power, upgradability, and free software. What more could there be? From ZEOS, lots more.

Because your new ZEOS system is not only fast, it's absolutely loaded with features. Like our 300 watt power supply with *built in surge suppression,* eight expansion slots, twin cooling fans for even more reliability plus our unique seven bay SpaceSaver case. And, every ZEOS system is UL® listed.

And don't forget you're also receiving 24 Hour a Day Toll Free Technical Support, our 30 day Absolute Satisfaction Money Back Guarantee, Express Parts Replacement and more. So go ahead.

Pick your Power, your Package, and your Price and give us a call. Your friendly, expert ZEOS Systems Consultant is ready to answer any questions you may have. *Call Now Toll Free 800-423-5891.*

PACKAGES 2, 3 AND 4 INCLUDE LOTUS BUNDLE!

	Pkg. #1	Pkg. #2	Pkg. #3	Pkg. #4
386-33	$1395	$1895	$2395	$2895
486SX-20	$1595	$2095	$2595	$3095
486SX-25	$1695	$2195	$2695	$3195
486DX-33	$1795	$2295	$2795	$3295
486DX2-50	$1995	$2495	$2995	$3495
486DX-50	$2195	$2695	$3195	$3695

Add $200 to any price for a 128K cache. 486DX-50 SpaceSaver case has 6 bays.

PICK YOUR PAYMENT OPTION TOO:

When you buy from ZEOS you have a wide variety of payment options. We accept MasterCard, VISA, American Express and Discover cards, or if you wish we can ship COD.

We also have our own ZEOS credit card, the "Z-Card." The Z-Card allows you to charge your ZEOS purchases just like a MasterCard or VISA. There is a low consumer rate and there is no annual fee. We can send you an application or you can apply right over the phone. Our special Toll Free application number is 800-421-8942.

ZEOS also offers a terrific leasing program for businesses. The rates are lower than those charged by most of the others in our industry. We will promptly mail or fax you an application on request. Just give us a call at 800-423-5891.

Purchase Orders from Fortune 1000 companies, governments and institutions are subject to credit approval. Wire transfer is also available. Please call 800-423-5891 for details.

INCREDIBLE ZEOS PACKAGE #3

Add even more memory, a larger drive. And more Savings! You now receive:

- **4 full Megabytes of Ultra High Speed RAM.**
- **Our fast 130MB IDE hard drive with built in cache.**
- **Teac® 1.2 & 1.44MB FDD'S!**
- **Diamond SpeedStar Hi-Color VGA card/1MB RAM (32,000+ colors)!**
- **ZEOS 14" 1024x768 Non-interlaced VGA Color Monitor w/Tilt & Swivel.**
- **Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 *plus* a Microsoft mouse!**

THE ULTIMATE ZEOS PACKAGE #4

Now, Memory goes to 8MB and the drive to 210MB. PC Magazine *Editors' Choice* as a 486DX-33 Vertical!

- **8 full Megabytes of High Speed RAM.**
- **Your screaming 210MB IDE hard drive with its own built-in cache.**
- **Teac® 1.2 & 1.44MB FDD'S!**
- **Diamond SpeedStar Hi-Color VGA card/1MB RAM (32,000+ colors)!**
- **ZEOS 14" 1024x768 Non-interlaced VGA Color Monitor w/Tilt & Swivel.**
- **Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 *plus* a Microsoft mouse!**

ORDER NOW TOLL FREE

800-423-5891

FAX Orders: 612-633-1325
Govt. & Educ.: 800-245-2449
Outside US and Canada Call: 612-633-6131
Hearing Impaired (TDD): 800-228-5389
MasterCard, VISA, Discover, Am Exp, Z-CARD, COD and Leasing Programs.
GSA00K91AGS5176
Open 24 Hours a Day, 365 Days a Year!

If you thought power like this was out of your budget, take another look. While many of the others don't even offer 50MHz power, you can own the new ZEOS 486DX2-50 starting *complete for as low as $1995!*

Starting at $1995, you can select from any of four money saving ZEOS System Packages. Or, if you wish, let us custom build your hot new 486-50 to your exact specifications.

ZEOS POWER GRID FOR THE 486DX2-50

Apply The "Zeos Power Grid" To Match Your 50MHz Needs: Add $200 for 128K cache. Prices shown are for Intel 486DX2-50 CPU, for 486DX-50 add $200.

	Intel 80486DX2-50MHz	Upgradable CPU	1MB High Speed RAM	2MB High Speed RAM	4MB High Speed RAM	8MB High Speed RAM	42MB HDD, Fast IDE	107MB HDD, Fast IDE	130MB HDD, Fast IDE	210MB HDD, Fast IDE	Teac 1.2 Floppy Drive	Teac 1.44 Floppy Drive	14" Hi Res TTL Monitor	14" VGA Mono Monitor	14" VGA Color 1024 x 768 NI	Monitor Tilt & Swivel	Hercules® Graphics Card	Hi-Color VGA Card, 1MB	Sierra DAC	Shadow RAM/EMS Support	ZEOS/RS 101 keyboard	2 serial, 1 parallel, 1 game port
Pkg. #1 Only $1995	■	■	■				■			■		■			■	■			■	■	■	
Pkg. #2 Only $2495	■	■		■				■		■	■		■		■		■	■	■	■	■	
Pkg. #3 Only $2995	■	■			■				■	■	■			■	■		■	■	■	■	■	
Pkg. #4 Only $3495	■	■				■				■	■	■		■	■		■	■	■	■	■	

WHAT SHOULD I GET?

How should you configure your new ZEOS 486-50? Of course the best answer depends on your needs and what you plan to use your new system for. But never before has so much power been available to everyone at such a low price. Our suggestion would be to consider investing in two areas when you buy your new 50MHz system. The memory and drives. Particularly the memory.

From what we're hearing, memory will be important with the new operating systems debuting later this year. We would strongly recommend at least 4 megabytes, eight if it's in the budget. As for drives, think in terms of 100+ megabytes, applications just don't seem to be shrinking (however, before you go too wild, remember you can always add more drives). Both of our Packages #3 and #4 incorporate these suggestions.

Certainly another option you may want to consider is our Vertical case. This heavy

Your 486

ZEOS Breaks the '486-

duty case holds more drives than most others and has a top notch power supply and plenty of cooling.

It really is quite a buy. The power supply is the *TurboCool 300 watt* unit (check the retail price of the power supply alone if you really want to see what a good deal you're getting). It's well worth considering.

YOUR ZEOS EXTRAS. NO EXTRA CHARGE.

And don't forget, if you purchase a ZEOS Windows system we'll also include

7-16, 1-8 bit expansion slots	300 Watt Power Supply	Built in Surge Suppression	ZEOS SpaceSaver Case	Two cooling fans	24-Hour a Day Tech Support	System UL® Listed	FCC Class B	30 Day Money Back Guarantee	1 Full Year Limited Warranty	Microsoft DOS	Microsoft Windows	Microsoft Mouse	Lotus 1-2-3 for Windows	Ami Pro 2.0 for Windows	Adobe Type Manager	WinRIX Drawing Package	100's of Other Options	24 Hour Sales, 800-423-5891
■	■	■	■	■	■	■	■	■	■								■	■
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Consider the Vertical Option. We can build your new upgradable system in our eight bay vertical case. It comes complete with the 300 watt TurboCool power supply and two cooling fans. Add only $150.

Lotus *1-2-3 for Windows* plus *Ami Pro 2.0* with *Adobe Type Manager.* You'll be getting all the other ZEOS extras too.

If you don't go with the Vertical case, we'll send your 486DX2-50 in our seven bay SpaceSaver case (the 486DX-50 has 6 bays); it's complete with our top quality *300 watt* power supply, *built-in surge suppressor,* and *two* whisper quiet cooling fans.

DX2-50!

Remember too, ZEOS also provides you with 24 Hour Support, our 30 Day Money Back Guarantee, One Full Year Limited Warranty and our Express Parts Replacement Policy.

Ordering your new ZEOS 486DX2-50 is really quite easy. Simply pick up the phone and give us a call. You're going to love your new ZEOS '50. And that's a guarantee! *Call now Toll Free 800-423-5891.*

50MHz Price Barrier!

Computers *Now!*[SM]

Take Your Pick. We'll Ship Today!

RIGHT NOW. GUARANTEED!*

Yes, we can ship your new ZEOS '386 or '486 today! We've built up an extra supply of the hottest selling computers in America in their most popular configurations.

Here's how it works. We have these incredible ZEOS '386 and '486 color VGA systems pre-built and ready to ship. While supplies last, we will ship any of these systems to you *the day you order* subject to these conditions:

1. Your order must be received by 1PM Central Time M-F.
2. Credit Cards are subject to authorization.
3. Orders must be for ZEOS '386 or '486 systems configured as shown here. Any other systems or upgrades are custom built and will take slightly longer.

Yes! We can ship your new ZEOS system Right Now! Place your order by 1:00 PM Central Time and we'll ship today. Guaranteed!*

Our most popular '386 & '486 packages! 128K Cache, 130MB Drive, 4MB Memory and More. Ready to ship today!

'386-33 ONLY $2595.
As a '486-33 ONLY $2995!

- Upgradable CPU module allows you to change processors as your computing needs change!
- Ultra high speed Zero-Wait *128K* SRAM Cache.
- 4MB of Zero-Wait DRAM, expandable to a Total of 32MB on the motherboard.
- Ultra Fast 130MB IDE Hard Drive.
- 1.2MB and 1.44MB Teac® floppies.
- ZEOS 14" High Res 1024x768 Non-interlaced VGA Color Monitor with Tilt/Swivel base.
- High speed Diamond SpeedStar Hi-Color VGA graphics card with 1MB RAM and Sierra DAC (32,000+ colors) *plus* WinRIX drawing software!
- Lotus 1-2-3 for Windows, *plus* Ami Pro 2.0 with Adobe Type Manager, *plus* Microsoft Windows and DOS 5.0, *plus* a genuine Microsoft mouse!
- Shadow RAM and EMS support for enhanced performance.
- ZEOS/RS 101 key SpaceSaver kbd.
- High Speed ZEOS I/O with two Serial, one Parallel & one Game Port built in.
- 7-16, 1-8 bit expansion slots. Math coprocessor support for '386.
- Rugged ZEOS SpaceSaver Case with two cooling fans for added reliability and product life.
- Seven drive bays and our custom 300 Watt power supply now with its own built-in surge suppressor.
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

***OUR GUARANTEE TO YOU:**

If we accept your order for immediate shipment and fail to ship your system under the conditions outlined, we will ship it at *our expense* as soon as it is ready.

This offer is good only as long as these pre-built systems remain in stock; please give us a call to verify availability. This offer does not apply to other ZEOS systems or custom configurations.

IMMEDIATE SHIPMENT IS ONLY PART OF THE STORY.

These are not just any computer systems. They're the high performance, high quality ZEOS *upgradable* systems. Packing all the ZEOS value that has won PC Magazine Editors' Choice—*nine times!*

So why not give us a call right now. If we hear from you by 1:00 this afternoon, we'll get your new system on the way to you today! Call now Toll Free 800-423-5891.

ORDER NOW TOLL FREE
800-423-5891

FAX Orders:
612-633-1325
TDD Orders:
800-228-5389
Outside US and Canada:
612-633-6131
MasterCard, VISA, Am Exp, Discover, Z-Card and COD.
GSA #GSA00K91AGS5176
Open 24 Hours a Day, 365 Days a Year!

ZEOS INTERNATIONAL, LTD.

Purchase orders from Fortune 1000 companies, Governments and institutions subject to approval. Leasing programs available. All prices and specifications subject to change without notice. Please call to confirm pricing, specification and warranty details. The following are trademarks of their respective corporations: Microsoft, MS-DOS and Windows of Microsoft Corporation; ZEOS, Computers Now!, SpaceSaver, SuperCase and Z-Card of ZEOS International Ltd. © ZEOS International Ltd., 530 5th Avenue, N.W., St. Paul, MN 55112 USA. ZEOS is a publicly traded company, NASDAQ symbol: ZEOS. Lotus is a registered trademark of Lotus Development Corporation. Ami Pro is a trademark of Samna Corporation, a wholly-owned subsidiary of Lotus Development Corporation.

Apply Now for the Z•CARD!

NO ANNUAL FEE!

SEND FOR YOUR ZEOS CREDIT CARD

- **Low Consumer Rate!**
- **No Annual Fee!**

Now you can send for your own ZEOS Credit Card. It works just like a MasterCard or Visa for ZEOS purchases.

Fill out your Z•Card™ Application and mail it today to **ZEOS International, Z•Card Processing Center, 530 5th Avenue N.W., St. Paul, MN 55112.** We'll give you a call as soon as your credit line is established!*

Please complete all appropriate sections, *providing at least two years residence and employment history.* **THIS IS NOT A CREDIT AGREEMENT!** One will be sent to you upon authorization of an account. (This Form Must Be Signed To Process Your Order.) All Financed Purchases Are Subject To Credit Approval. **If You Have Any Credit Questions, Please Call 800-421-8942 For Assistance.** Thank You!

A married person may apply for individual credit. I am applying for (please check appropriate box):

☐ **JOINT CREDIT** with another person. Complete entire application.

☐ **INDIVIDUAL CREDIT** but rely on income or assets of another person as a basis for repaying the credit requested. Complete entire application.

☐ **INDIVIDUAL CREDIT.** Do not complete Section C.**

**If you are a married Wisconsin applicant, you must provide your spouse's information as indicated, even though your spouse may not be signing the contract.

NOTICE TO WISCONSIN APPLICANTS: YOU MUST DISCLOSE YOUR MARITAL STATUS:

☐ married ☐ unmarried ☐ legally separated

A. YOUR PERSONAL INFORMATION

Name _____

Home Phone (_____) _____

Soc. Sec. No. _____ Date of Birth ____/____/____

Address _____ Apt. _____

City _____ State _____ Zip _____

Since? (Mo./Yr.) _____ ☐ Buy ☐ Rent ☐ Other _____

Previous Address _____

City _____ State _____ Zip _____

Employer _____ Since? (Mo./Yr.) _____

Monthly Gross Salary $ _____ Daytime Bus. Phone (_____) _____

Previous Employer _____ _____ From - To

Occupation _____

Income from alimony, child support or separate maintenance payments need not be disclosed if you do not wish to have it considered as basis for repaying this obligation.

Additional Monthly Income $ _____ Source: _____

Name & Address of Nearest Relative Not Living With You _____

_____ Relationship _____

B. CREDIT INFORMATION

PLEASE TELL US IF YOU HAVE: Checking Account ☐ Yes ☐ No
Savings Account ☐ Yes ☐ No

	Y/N	How Many?		Y/N	How Many?
Bank Loan	___	_____	Dept. Store Charge Card	___	_____
VISA	___	_____	Credit Union Account	___	_____
MasterCard	___	_____	Other Major Charge Cards	___	_____
Finance Company Loan	___	_____			

C. JOINT APPLICANT INFORMATION

Joint Applicant's Name _____

Soc. Sec. No. _____ Date of Birth ____/____/____

Address _____ Apt. _____

City _____ State _____ Zip _____

Home Phone (_____) _____ Date of Residence _____ (Mo./Yr.)

Joint Applicant's Employer _____ Since? (Mo./Yr.) _____

Bus. Phone (_____) _____ Monthly Gross Salary $ _____

CUSTOMER AUTHORIZATION

I authorize ZEOS International, Ltd. or its assignees to investigate credit records and to report my performance hereunder to credit agencies. I hereby certify that the following information is furnished to you for the purpose of obtaining credit and is true and correct to the best of my knowledge and belief.

Applicant's Signature _____

Date _____

Joint Applicant's Signature _____

Date _____

FOR MARRIED WISCONSIN APPLICANTS:
I acknowledge that the obligation described herein is being incurred in the interest of my marriage or family.

Buyer's Signature _____ **Date** _____

There are costs associated with the use of this credit card. To obtain more information about these costs, call us at 800-421-8942 or 612-635-0613 or write to ZEOS, Z•Card Processing Center, 530 5th Avenue N.W., St. Paul, MN 55112.

NY—A consumer credit report may be requested in connection with this application or in connection with updates, renewals or extensions of any credit granted as a result of this application. If I subsequently ask for this information, I will be informed whether or not such a report was requested and, if so, the name and address of the agency that furnished the report.

OH—THE OHIO LAWS AGAINST DISCRIMINATION REQUIRE THAT ALL CREDITORS MAKE CREDIT EQUALLY AVAILABLE TO ALL CREDITWORTHY CUSTOMERS AND THAT CREDIT REPORTING AGENCIES MAINTAIN SEPARATE CREDIT HISTORIES ON EACH INDIVIDUAL UPON REQUEST. THE OHIO CIVIL RIGHTS COMMISSION ADMINISTERS COMPLIANCE WITH THIS LAW.

*Financing not available in Alaska, Hawaii or outside the continental U.S.

Circle 324 on reader service card

You Know The Sculptor But You Can't Think Of His Name.

You could sit there until you're as stiff as a statue and never remember it. And reference books won't help because you can't look up what you don't know.

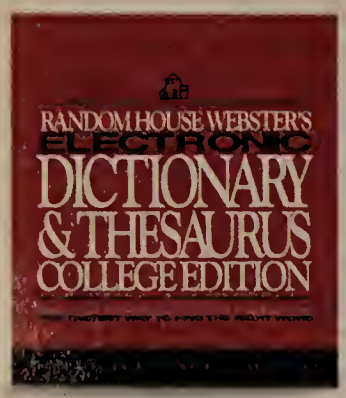
Introducing the Random House Webster's Electronic Dictionary & Thesaurus College Edition.™ 180,000 words with definitions and 275,000 synonyms, integrated into software that enables you to find words fast. Even if you don't know what you're looking for.

For example, simply type in the things you *do* remember; like "Sculptor AND French." The Random House Webster's Electronic searches its definitions and comes up with a list of French sculptors including August Rodin. "AHA," you say—"Rodin's Thinker." It's like using a dictionary in reverse. And it's impossible with a book.

Imagine an instant index of cities in Japan. Rivers in Germany. Business words, government terms, names, places, dates... without even knowing the word you're looking for.

Imagine, all the ideas locked up in two of the world's most respected reference books, unleashed and at your fingertips. Then imagine how much better your writing could be. With the Random House Webster's Electronic—the fastest way to find the right word.

See your dealer or order now for only $99. **1-800-872-9933 Dept. W07**



THE FASTEST WAY TO FIND THE RIGHT WORD

Reference Software INTERNATIONAL

Random House and the Random House Design are registered trademarks of Random House, Inc. The Fastest Way To Find The Right Word is a trademark of Reference Software International. © 1992 Reference Software, Inc.

Circle 282 on reader service card

CONSUMER WATCH

Advice and information for the computer consumer

by Roberta Furger

Stores That Sell PCs Can't Always Fix Them

I purchased a Packard Bell 386SX computer from a local appliance store in April 1991. Everything worked fine until one day in September, when I turned the machine on and everything went dead. Trying to restart the system only caused the lights to flash on and off. I figured that the power supply was gone and took the computer back to the store to have it repaired. I thought if these people were authorized to sell Packard Bell computers, they would also have a contract to service them.

The computer was in the shop for four weeks, and when I brought it home, I discovered that the hard drive didn't work. I had to take it back once again for repairs. I've now been without my PC for six weeks, and I'm wondering if it's worth all the hassle.

David Marchand
Windsor, Ontario, Canada

Editor's note: The store that sold you your computer is not always the best place to go for repairs, as Marchand found out. Authorized repair facilities receive priority shipment of replacement parts and complete technical documentation, which often (although not always) facilitates a quick turnaround on repairs. In the case of Packard Bell systems, which are sold through the mass market, resellers are often not equipped to service them, according to company representative Christopher Krauss.

After receiving a copy of Marchand's letter, Packard Bell gave him the address and phone number of the nearest authorized service center and offered to extend his system's warranty for six months, given the repair delays he encountered. According to Krauss, customers can call Packard Bell's customer service line at 818/886-1111 to determine whether an outlet is authorized to handle repairs.

Warranty Woes

Northgate Computer Systems advertises a one-year warranty on its systems and component upgrades. However, I have discovered that what actually happens is much different from what the company's policy states.

I purchased a 65MB hard drive from Northgate for $549. The drive failed within the first month. Northgate sent a refurbished drive as a replacement, and this second drive failed while still under warranty. I was offered another refurbished drive and a 90-day warranty for 5 percent of the original purchase price, but I refused this offer. Northgate then offered a refurbished drive with a 90-day warranty at no charge, but I again refused, because I paid for a new, unused hard disk. I have yet to receive a new unit from Northgate that works.

Harry Lewis
Virginia Beach, Virginia

Editor's note: According to Northgate representative Bill Everson, Northgate follows the "industry-standard" policy of replacing hardware that fails while still under warranty with refurbished units. These replacement parts are warranted for 90 days or the remain-

Mistaken Identities

Two New Jersey companies have been mistakenly inundated with calls from irate customers of two Southern California mail-order companies, One Stop Micro of Van Nuys and American Computer Technology (ACT) of Garden Grove. The California mail-order firms have charged these customers for goods that were never shipped.

ACT (American Computer Technologies) of Methuchen, New Jersey, and One Stop Micro of Little Silver, New Jersey, are *not* affiliated with the similarly named California firms. One Stop Micro of New Jersey is a national distributor of computer hardware and has been in business for seven years. "We have an excellent reputation, and we don't want to ruin that," says President Larry Firestone. The New Jersey–based ACT is a third-party provider of PC service and support, according to Office Manager Candace B. Ramirez.

ANTHONY RUSSO

der of the initial warranty period, whichever is longer. At no time, says Everson, has Northgate sold a 90-day warranty for 5 percent of the cost.

Lewis's confusion regarding the warranty and replacement of the defective drive is understandable, however, because his unit's documentation states only that "the obligation of Northgate...is limited to repair or replacement of defective parts of the system at no charge if Northgate determines such part is defective." It doesn't mention replacing defective units with "refurbished" ones.

Perhaps Lewis was not the only customer having trouble with the warranty: A revised manual now clarifies the point in question. Under a new section titled "Coverage of Replacement Parts," the revision reads, "The obligation of Northgate under this warranty is to repair or replace the part or the unit with new or warranted-as-new *[emphasis added] parts or units at its discretion at no charge...." The new section also clarifies the warranty period on the replacement unit.*

Because of the confusion over warranty coverage, Northgate sent Lewis a new hard drive and added 90 days to the time left on his initial warranty.

Now That's Service

I recently purchased a Tandy 3000 HL floppy drive, which does not take kindly to running non-Tandy components. After discussing my system configuration, the PC Connection salesperson put me on hold and discussed my desired upgrade with his tech department. In addition to the floppy drive, he suggested I replace my controller. The equipment was delivered the next day, as I requested, and performed flawlessly.

PC Connection's sales department isn't there just to sell products, but to help customers make the right purchase. Its technical department understands PCs, and the company delivers when promised. With these qualities, I'm sure it's here to stay.

Joseph A. Boudreau, Jr.
Fort Walton Beach, Florida

Not All Surge Protectors Are Created Equal

Snow broke a neighbor's tree limb, which hit a power line and cut off power to my house. When the power was restored, the electricity came through the house on the ground wire—a power reversal, according to the power company. My computer, printer, surge protector, and backup power supply all went up in smoke. Although I was protected from power outages and surges, power coming in on the ground wire burned my backup protection along with everything else.

George Dwight
Pueblo, Colorado

Editor's note: As Dwight discovered the hard way, many surge protectors

Congratulations... Now all your applications can read.

protect only one line. That's enough to earn them a UL rating but not enough to protect against all power catastrophes. Look for a surge protector that covers positive, negative, and ground lines. While more expensive, the extra protection would likely have saved Dwight's system.

Compatibility Conundrum

Nearly two years after *Windows 3.0*'s release, *Consumer Watch* still gets letters from purchasers of *Windows* products who found out too late that compatibility isn't all it's cracked up to be.

David Minsterman of Lafayette, New York, had a problem when he tried to use Logitech's *ScanMan Plus* with *Windows 3.0*. "I purchased a package that claims *Windows* compatibility and states that *Windows 2*.x is required," writes Minsterman. "I couldn't know that my *ScanMan Plus* purchase in April 1991—well after the release of *Windows 3.0*—would be outdated."

Many products designed for *Windows 2*.x won't run under *3.0*. Most vendors upgraded their packages and offered competitive pricing to users wishing to upgrade. Others, like Logitech, introduced new software rather than upgrading an existing package.

In a form letter sent to Minsterman and other *ScanMan* or *ScanMan Plus* users, Logitech states it doesn't intend to upgrade its software to run under *Windows 3.0*. Instead, it touts the benefits of its new scanning software, *Ansel*, and provides information on how to buy a copy. "I spent $150 on the scanner package to begin with. Their solution to my problem is to spend another $85 for new software," says Minsterman.

After *Consumer Watch* contacted Logitech, the company sent Minsterman a free copy of *Ansel*.

Defective Parts Delay Shipment

I was attracted by a huge advertisement and good consumer ratings for Zeos, so I ordered a PC from the company last October.

The salesclerk said the system would be delivered in ten days. He also told me the order would be placed the same day, even though my company's check might not reach them until a week later. Fifteen days later (after my check cleared the bank), I called. I was told the PC was on the production line because of back-ordered parts and was given a new delivery time. Later, I called again to make sure I would receive delivery as promised. I was told the unit was not on the production line and they didn't know the reason for the delay. I called again five days later and canceled the order.

Lynn Hsu
Cerritos, California

Zeos responds: At the time Ms. Hsu placed her order, the lead time for custom-built systems was the ten days quoted. However, soon after that, we received two consecutive shipments of

When teamed together, ***OmniPage***™ **Direct** software from Caere® and the **Hewlett-Packard ScanJet IIp** give all your existing software the ability to read text and numbers. Pages are scanned directly into your Windows™ or Macintosh® applications as if you were typing them in yourself – only faster.

Think of it as the world's most advanced reading course ever. With the HP ScanJet IIp and *OmniPage* Direct you can enter information directly into your most critical reports, presentations, or desktop published documents – without ever leaving your favorite word processor, spreadsheet, or DTP application.

OmniPage Direct is the latest OCR (optical character recognition) breakthrough by Caere Corporation, the company that set the standard with the world's most powerful recognition software, *OmniPage* Professional. Now with *OmniPage* Direct, you get an easy-to-use program that reads virtually any document directly into your existing software. Best of all, *OmniPage* Direct comes at a breakthrough price.

Add to this the compact HP ScanJet IIp and you have the ultimate speed reading solution. The ScanJet IIp is another innovation from the leader in desktop scanners and can directly input images and text into your applications – for a very affordable price.

To learn more about how easy and affordable scanning has become, call our OCR hotline for the dealer nearest you. **Call 1-800-535-SCAN.**

Caere, the Caere logo and OmniPage are registered trademarks of Caere Corporation. All other ®registered trademarks and ™trademarks are of their respective companies. ©1992 Caere Corporation.

CAERE®

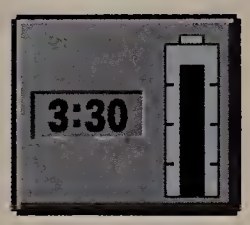
Circle 21 on reader service card

IN A CATEGORY OBSE
AND LIGHTER, COMPAQ W
ANOTHER ADJE

Make it smaller. Make it lighter. Make it lighter. Make it smaller.

These must be the mandates emblazoned upon every R&D document handed to the engineers of today's crop of notebook computers.

Admirable goals to be sure. Goals that the engineers at Compaq, however, believe fall well short of making the most of portable computing.



Accurate to within minutes, the COMPAQ Power Smart Pack battery gauge clearly displays remaining battery life at the touch of a button.

Which explains why the latest 386SL notebook technology from the labs in Houston — the new COMPAQ LTE Lite/25 and LTE Lite/20 PCs — are not only the lightest (a scant 6 lbs.) and the smallest (only 8.5"x11"x1.75") notebook PCs that we've ever built. They're also the smartest.

The COMPAQ Hibernation feature saves all open files to the hard drive and turns the unit off, either upon request or as an automatic feature. Power up the COMPAQ LTE Lite later and you're back exactly where you left off.

THE BRAINS BEHIND THE OPERATION.

When it came time to design a new notebook, we started (logically enough) with the battery.

The new COMPAQ Power Smart Pack battery in our new notebooks delivers up to 4.5 hours of computing, a full hour longer than most.

A microprocessor inside the battery itself monitors current usage levels and continually calculates the available power remaining.

It can even instruct the notebook to save all open files to the hard drive should the battery power run too low.

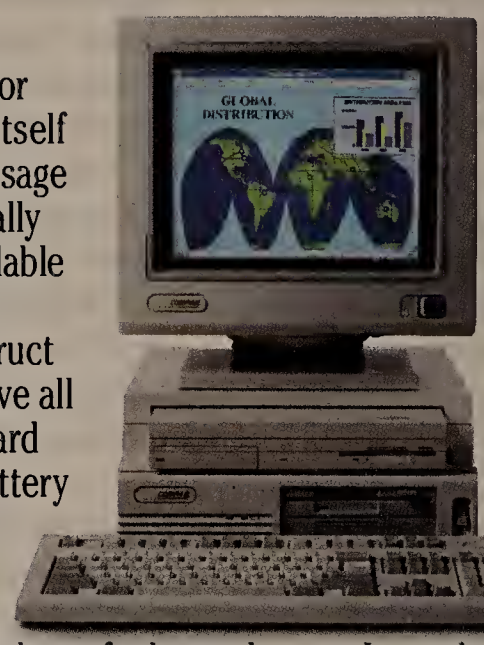
And the energy-saving features in our newest notebooks go far beyond the presence of an Intel 386SL chip.

To make the most of the smarter battery, the new COMPAQ LTE Lite also comes with user-adjustable power-drain settings, and three different sleep modes — System Idle, System Standby, and Hibernation.

A MOST MODERN MODEM.

Our optional 9600-bps modem for the COMPAQ LTE Lite PCs would make even Alexander Graham B. proud.

The COMPAQ Enhanced 9600-bps Internal Modem is compatible with the broad base of today's communications protocols.



Just slip the COMPAQ LTE Lite into the COMPAQ Desktop Expansion Base and you're instantly connected. Expansion slots, external ports, and mass storage bays give you immediate access to monitors, networks, hard drives, tape drives, CD-ROM and more. And all the while, built-in security features ensure a safe harbor for your notebook.

In modem talk, that means true V.32 9600-bps data transmission and V.42bis compression for up to 38.4 kbps throughput, as well as full support for Hayes AutoSync.

This little marvel negotiates the fastest transmission throughput that the other end of the line can muster, whether it's sending or receiving.

It even drops to a low power-drain standby state and monitors incoming signals if you're waiting for a call to come in.

Or for that matter, another modem to catch up.

NOT ONLY SMART, BUT BRIGHT.

The new, efficient COMPAQ Maxlight VGA display makes for a much brighter screen than our previous notebooks, and does it without sacrificing battery life.

Sharper graphics and text in up

*COMPAQ LTE Lite/25 only. © 1992 Compaq Computer Corporation. All rights reserved. COMPAQ, LTE Registered U.S. Patent and Trademark Office. Maxlight and Power Smart are trademarks of Compaq Computer Corporation. Trademarks and trade names shown are those of the respective companies. The Intel Inside Logo is a trademark of Intel Corporation.

SSED WITH SMALLER OULD LIKE TO SUGGEST CTIVE: SMARTER.

to 64 shades of gray complement an enhanced video subsystem that's so fast it virtually eliminates "submarining," better known as "where did that #%$**# cursor go?"

A NOTEBOOK THAT'S USELESS IN THE WRONG HANDS.

At Compaq, we realize that data security is every bit as important as hardware security.

At the hardware level, DriveLock locks the hard drive, preventing access to data even if the drive is removed.

One-touch QuickLock and QuickBlank functions

Isolated inverted "T" cursor controls are in a familiar position so you don't have to teach your fingers new tricks.

allow you to quickly (surprise) disable the keyboard or blank the screen.

And of course, our new notebooks come with a Keylock slot for an optional cable lock.

With all of the above, plus a 120-MB hard drive,* RAM expansion to 10 MB, cache memory, simultaneous display, and an auxiliary battery, to say these are the best notebooks we've ever made would be something of an understatement.

To back them with a one-year worldwide warranty and our toll-free Compaq Customer Support Center hotline would be more like it.

intel inside

So don't choose between a small notebook and a smart notebook. Choose both.

Choose the new COMPAQ LTE Lite. For information about our new notebooks or an Authorized COMPAQ Reseller near you, call Compaq in the U.S. at 1-800-231-0900, Ext. 100, or in Canada at 1-800-263-5868, Ext. 100.

COMPAQ

Actual weight: 6 lbs. Actual dimensions: 8.5"x11"x1.75". Actually, this is the best notebook we've ever built.

Circle 47 on reader service card

cases that were not up to our standards. The confusion over when the system would ship was due to our not knowing when acceptable cases would arrive.

Ms. Hsu wondered why her check was cashed before her computer was shipped. Because of the high value of computers, we must wait for a check to clear before we can ship the product. When a customer uses a credit card, for which credit authorization is available, we do not charge the card until the computer is ready to be shipped. Ms. Hsu's refund was processed the same day she called to cancel the order.

Rick Apple
Vice President, Marketing

Editor's note: In a follow-up conversation, Zeos's Apple added that the company's new policy is to inform customers when there will be a "significant delay" in shipment. Customers then can opt to cancel their order.

Customers buying PC hardware or software by mail should confirm a ship date with the salesperson and request written notification of any delays. Credit card shoppers should insist that their card not be charged prior to product shipment.

An Offer Too Good to Be True

ChipSoft of San Diego placed a full-page ad in the January 1992 issue of *PC World* offering readers a free copy of the $179 *Norton Utilities* when they purchased *TurboTax*. But as the roughly 3000 people who took ChipSoft's offer discovered, the free copy wasn't the full *Norton* but a version created specially for ChipSoft called *Norton Utilities 6.01 LTE*. The "light" version did not include NDOS or the Disk Editor and came with condensed documentation. In addition, users could not register the software, since it didn't include the required UPC code.

Alan Gleicher, president of ChipSoft's Personal Division, told *Consumer Watch* that the company had changed its ad to identify the bonus package as "Norton LTE" and had begun explaining the Norton offer to callers before they placed an order. Under an agreement with the Massachusetts attorney general's office, which acted on behalf of a Massachusetts resident, the company has also agreed to offer anyone who responded to the misleading ad a free upgrade to *The Norton Utilities 6.01*. ChipSoft also made a $1000 contribution to the Attorney General's Trust Fund in lieu of paying a penalty.

Think you've gotten a raw deal—or a great one? Send the details to Consumer Watch, PC World, *501 Second St. #600, San Francisco, CA 94107; PC World Online, Consumer Watch; MCI Mail PC World Editorial; CompuServe 74055,412; or 415/442-1891 (fax). We'll investigate complaints and publish letters with the broadest interest.*

Save Your Copies of PC WORLD

Now there's an easy way to keep copies of *PC World* readily available for future reference. *PC World's* sturdy and practical file cases are designed to keep your copies in top condition and at your fingertips. Each file case holds up to six valuable issues of *PC World*. The rich maroon leatherette and gold leaf embossed lettering make these file cases attractive additions to your bookshelf at home or in your office. Start organizing your reference library today for only $7.95 for one file, $14.95 for two files, or $27.95 for four files (PA residents add 6% sales tax). Please add $1 per case for shipping and handling. Enclose your check made payable to Jesse Jones Industries and send to :

Jesse Jones Industries
Dept. PCW
499 East Erie Avenue
Philadelphia, PA 19134

Or call toll-free 7 days, 24 hours 1-800-825-6690. Charge orders (minimum $15) accepted. Please note that delivery cannot be made to P.O. Boxes. Please allow 4-6 weeks for delivery.

Edited by ERIC BENDER

Competitive Upgrades Ease Windows Path

Are Software Prices Falling? Yes and No

Street Prices for Major Packages Barely Waver

Borland Int'l ignited a brushfire in 1989 when it offered the first big "competitive upgrade," and software buyers and sellers are still feeling the heat.

Instead of upgrading to the next version of *1-2-3*, Borland told Lotus users, pay the same small upgrade fee—to us—and we'll send you *Quattro Pro*. "We essentially took price out of the [buying] equation," says Spencer Leyton, Borland's senior vice president of business development.

The scheme succeeded so well that virtually all major PC software vendors have followed Borland's lead—most recently with a flurry of attractive competitive upgrades targeting users who are moving from DOS-based to *Windows*-based applications. Companies making that transition can now upgrade their entire software population quite cheaply.

Gerard Nussbaum, management information systems director of Premier Hospital Alliance in Round Lake, Illinois, found Microsoft's $129 *Excel* upgrade irresistible. "If I'd had to pay full price for *Excel*, I probably wouldn't have switched from *1-2-3*, because I still needed to be able to link my DOS users to *Windows* users," says Nussbaum. "The hassle wouldn't have been worth it. For a $400 savings, though, I decided I'd figure out a way."

The scheme also plays well in the DOS world. Keith Dolan, a PC specialist at Hussey Seating in North Berwick, Maine, happily exchanged old versions of *SuperCalc* for the latest *Quattro Pro*. "They told us they'd take anything in exchange, so we thought it would be a good chance to make a switch," says Dolan.

Regular Prices Unchanged

But for the majority of customers, who aren't changing brands, PC software street prices have held steady for years. "You tend to see a drop in price when a revision or update is due, then the price goes up for a little while, then it goes back down to the original level," says John Murphy, president of Metro Computing in Gibbsborough, New Jersey, which tracks hardware and software street prices.

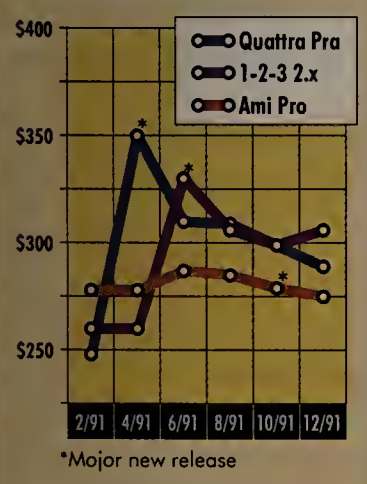
Firm prices don't mean list prices, though, says Murphy: "Anyone who pays retail for software is out of their mind."

dor offers different terms, conditions, and ways of tracking network usage.

Fortunately, in response to user demand, most vendors now offer concurrent LAN licensing, so you needn't buy a copy for each PC on the network—you simply agree on a maximum number of simultaneous users. "This is much more apropos to the way that our customers operate," explains Pete Higgins, vice president of Microsoft's analytical software unit.

Early Buyers of New Versions Often Pay More

Street pricing for selected applications



Source: Metro Computing

While prices of major applications have remained steady over the years, you often pay extra for a major new release soon after it ships. 1-2-3 and Quattro Pro followed that pattern; Ami Pro did not.

So. . .How Much Did You Pay?

Pricing options for single-unit buys of Windows packages

Source: Metro Computing, Fry's Electronics

Single-copy prices for popular applications such as WordPerfect and 1-2-3 vary enormously depending on how you buy. Network packs, other volume purchases, and unpublished special deals make the price picture even more fiendishly complex.

"If I don't see an automatic 40 percent off retail, there is no way I'm going to buy," says Dick Aiken, PC manager for GE Armaments Division in Burlington, Vermont. "I provide my users with support, so there's no need to pay margin for those services." Aiken scours the papers for mail-order ads to help him negotiate prices with local dealers and distributors and buys via mail if he sees a good deal.

Turmoil on the LAN

Networks add even more pricing complications. Each ven-

Still, the various pricing structures can be bewildering. If a business wants to install a LAN version of *WordPerfect 5.1 for Windows*, for example, the price it pays depends on whether any PC-based word processing packages are currently installed, whether it has existing copies of *WordPerfect* for DOS or some other word processor, whether it wants documentation included or is willing to copy its own, and where it buys the product: from a mail-order firm, a dealer, or direct from the vendor.

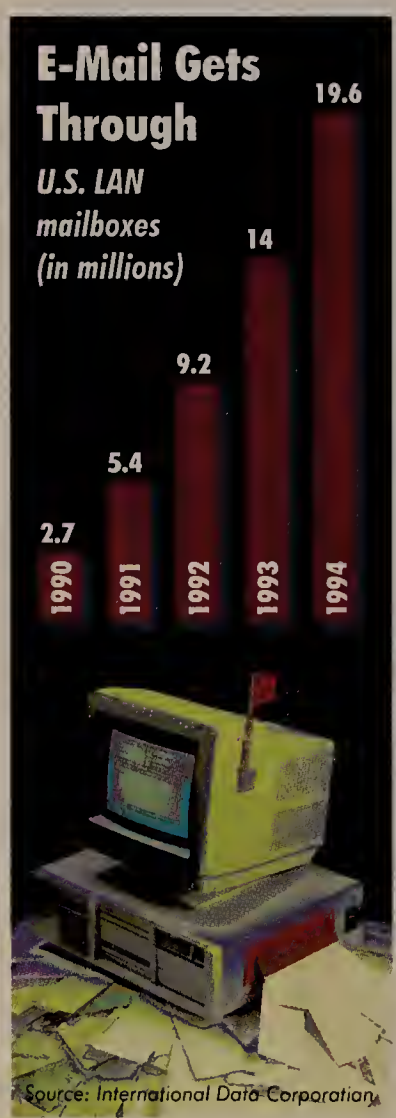
—*Alice LaPlante*

E-Mail Finds Bigger Audience, Role

Microsoft, Lotus Offer Rival "Mail Enabling" Platforms

Your local software store doesn't stock electronic-mail packages, but vendors and network resellers are quietly installing them by the truckload. By year-end there will be 9 million–plus users of PC local area network mail in the United States—far more than there will be, say, registered *WordPerfect* users.

Impressive as these numbers are, they're not what persuaded Lotus and Microsoft to acquire the two leading mail vendors last year. The principal motivation is mail's potential role as the foundation for controlling the next generation of PC software—"mail enabled" applications.



Offering PC users powerful connections at relatively low cost, network-based electronic mail is flourishing.

Establishing Mail Dominance

The idea is that developers who want to write network applications can piggyback on the mail system rather than write their own messaging code. The resulting applications range from Software Publishing's *Professional Write Plus* (which lets you send mail from a pulldown menu) to group schedulers to networked-form publishers to sales-lead systems (which cull customer prospects from a data base and mail them to salespeople nightly). "Every department within an organization has an opportunity for applications of this type," says Laura Jennings, Microsoft's group product manager for work-group applications.

Early mail-enabled applications often used Message Handling Service (MHS), a least-common-denominator mail engine that accompanies NetWare. A year ago, mail vendors began opening their product architectures to allow users and third parties to fully exploit a given mail package.

Exploiting mail packages would be easier if a standard let developers write a version of an application that could talk to all major mail systems. Last fall two conflicting standards were proposed—the first by Lotus, IBM, and Apple; the second by Microsoft.

While a mail interface standard would be a boon, just building full-powered mail-enabled applications remains a formidable task because each organization's needs and computing environment are so idiosyncratic. "Mail-enabled applications are going to be very big, very exciting, but each must be done for the customer—almost like a custom-tailored suit," cautions Eric Arnum, editor of *Electronic Mail and Micro Systems* in Forest Hills, New York.

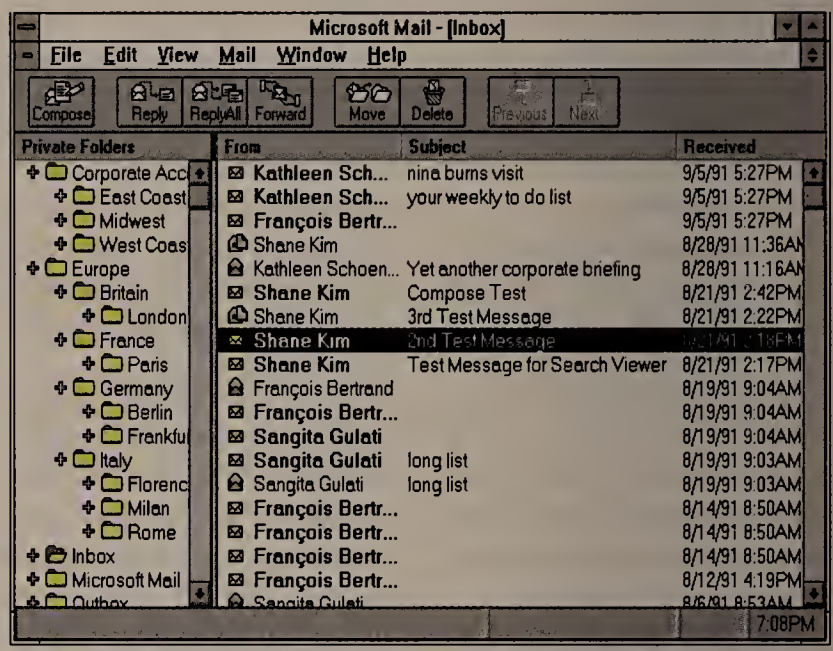
Making Better Connections

This year mail vendors will make a big push to remove a perennial customer headache—the difficulties of connecting from one mail system to another brand of PC net mail, large-system mail, or other communications service.

They'll also grapple with what Arnum calls "the dirty little secret of LAN E-mail: network management and reliability." These problems reside mainly in the nets themselves rather than in the mail packages. Networks "require a lot of attention if they're going to run properly," says Peggy Pisani, information technology consultant at Baxter Healthcare in Deerfield, Illinois, which is rolling out Lotus's *cc:Mail* to 3000 users on 20 networks. "For our enterprise E-mail system to work, all these LANs have to stay up."

Another major effort will be to give remote (dial-in) users more powerful access to mail services. Suppliers are also tailoring versions for a menagerie of new portable PCs: palmtops, pen-based systems, and notebooks toting wireless data communications.

As development costs and support requirements rise, so will prices. "Vendors are pretty unanimous that E-mail has been underpriced," says Shelly Harrison, *cc:Mail* marketing director.



Upcoming Windows mail packages like Microsoft Mail 3.0 leverage the graphical user interface to ease tasks in handling mail.

Lotus has taken the lead in mail with *cc:Mail*'s 1.5-million installed base (plus the ground-breaking *Lotus Notes*, which incorporates mail and acts as a tool kit for information-sharing applications). Microsoft is right behind with *Microsoft Mail;* the company is planning to launch a marketing offensive midyear with a major new release.

Da Vinci eMail from Da Vinci Systems in Raleigh, North Carolina, should get a boost from the company's purchase of Action Technologies' *The Coordinator.* Other major players include *WordPerfect Office,* and *Higgins* from Enable Software in Ballston Lake, New York. Among smaller suppliers, *Right Hand Man* from Futurus in Metairie, Louisiana, and *Notework* from Notework in Brookline, Massachusetts, are selling well. —*Eric Bender*

LOGICAL PRINTER SHARING

Justification

If one user prints 40 pages a day on an 8 page per minute laser printer, that printer will be in use for only 5 minutes per day! Logical Connections allow several users to easily share expensive printers and other resources, like modems and plotters. Choose the peripheral that you need from a pop-up menu.

If your company has a LAN, use Logical Connections for local printer sharing in smaller workgroups, rather than printing centrally through the LAN. Local printing is more convenient and more secure!

- **Made in the USA**
- **UL Listed Power Supplies**
- **FCC Class B Certification**
  (FCC Class A – LC Jr. with unshielded cables)
- **Available from Local Dealers**
- **Fast Data Input and Throughput**
- **Socketed DRAM Upgrades to 1Mb**
- **Largest Selling PSDs in the USA**

Versatility *LC Plus – 512Kb* $595

All six ports of the Logical Connection Plus are automatically configured as parallel or serial, and input or output. Installation is a breeze. You just plug in your cables and run the installation software; the LC Plus will do the rest. Besides being very user friendly, the LC Plus processes data at blazing speed for any application. You can share modems and transfer files at 115,200 bps.

6 PCs or Printers/Any Combination

Practicality *LC – 256Kb* $395

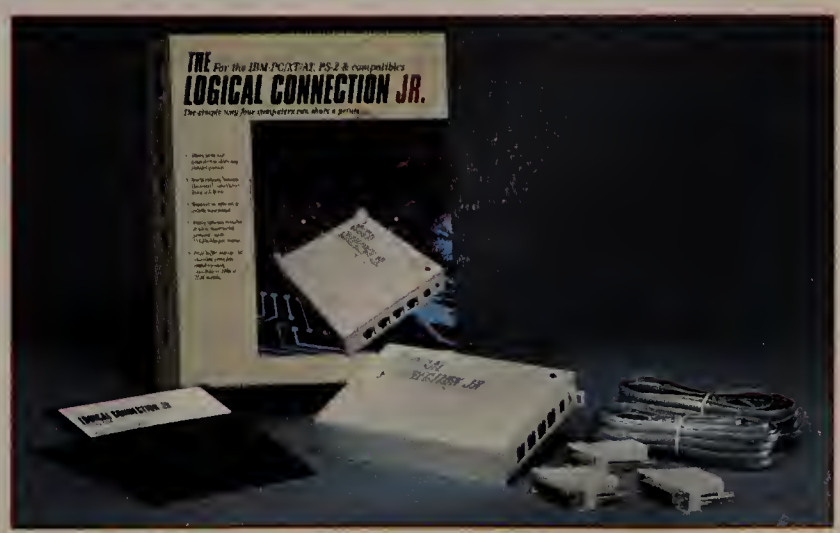
The original Logical Connection is still all the printer sharing device that most people need. The LC is ideal for printing of word processing and occasional graphics data. Its eight ports are: four bi-directional serial ports which can be set as input or output, two parallel inputs and two parallel outputs. Six users can share two parallel printers. The serial ports can also share modems.

6 PCs to 2 Printers (Typical)

Simplicity *LC Jr. – 256Kb* $239

Inexpensive modular cable, even hundreds of feet in length, can be used to serially connect up to four PCs to the Logical Connection Jr. at speeds up to 115,200 bps. Plug your existing parallel printer cable into the LC Jr. and it will automatically convert the data from serial to parallel for fast parallel printing. Multiple users can send data simultaneously since the memory will buffer and queue jobs on a first-in-first-out basis.

4 PCs to 1 Printer



Logical Connection, Inc.
4660 Portland Road NE #108
Salem, OR 97305-1697

FAX: (503) 390-9372
Customer Support:
(503) 390-9375

LOGICAL CONNECTION
800-238-9415 *US & Canada*

Circle 126 on reader service card

EISA Bus Moves Closer to Mainstream

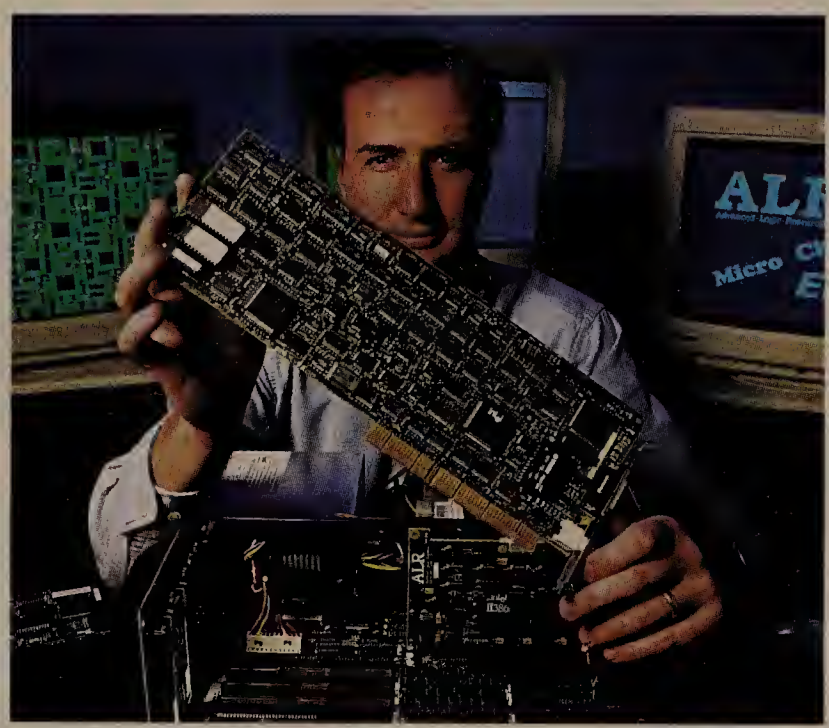
Offerings Abound as Cost Premium Drops Below $500

Two-and-a-half years after the grand debut of the Extended Industry Standard Architecture (EISA) bus, you can purchase a PC with the high-speed 32-bit bus for under $4000—making such systems affordable for many businesses that once balked at paying $10,000 and up.

The brainchild of a consortium of nine influential PC clone makers, EISA was designed to offer all the performance pluses of IBM's much-touted Micro Channel architecture (MCA) bus while maintaining compatibility with standard XT/AT add-in cards. EISA offered data transfer rates between peripherals and the CPU of up to 33MB per second, plus a blueprint for *bus mastering* (allowing an add-in board with its own processor to manage the bus, thereby lessening the burden on the CPU).

The first EISA PCs were high-performance products built to compete against minicomputers, says analyst Stella Kelly of Computer Intelligence/InfoCorp in Santa Clara, California. Towers of power like Compaq's Systempro carried heavy prices and targeted niches like network servers and CAD systems.

Since then, however, "many manufacturers have migrated EISA across their entire line" of PCs, Kelly says. For example, each of Compaq's Deskpro/M models have an EISA bus, with prices starting at around $3500, and Dell's PowerLine EISA models begin at around $3200.



Nantucket's Dave Alison says EISA provides "a chassis that I don't have to chuck out the door two to three years down the road."

ALAN LEVENSON

These price drops reflect both general trends among PCs and a much diminished premium for EISA components. The EISA chip set, EISA connectors, and a beefed-up power supply still cost slightly more than their ISA equivalents.

Customers should expect to pay $300 to $500 more for an EISA PC than for a similar ISA machine—less than half the differential of a year ago, notes Paul Gupta, president of Blackship Computer in Fremont, California.

Computer Intelligence/InfoCorp predicts 550,000 EISA PCs will ship this year in the United States—less than one-tenth the predicted number of ISA-bus shipments, and less than half the predicted deliveries of MCA PCs (almost all from IBM). But EISA should overtake MCA by 1996 and pass ISA late in the decade.

Planning for an EISA Future

Like many EISA users, Dave Alison, director of management information systems for Nantucket Software in Los Angeles, employs his ALR EISA systems as net servers. EISA's 32-bit data transfers accelerate access to Nantucket's 4GB disk subsystem. "The performance is a lot better than what we'd get with 8- or 16-bit cards," he says.

Alison chose EISA because the prices were "ridiculously low" and the systems are built for the long term—they can handle upcoming requirements like a switch to high-speed fiber optic networks. "I want to invest in a chassis that I don't have to chuck out the door two to three years down the road," he explains.

Stephen Burkholder, a computer consultant in Regina, Saskatchewan, uses his 486/EISA system from Insight Computers as an OS/2 workstation to support and develop mainframe software applications. Burkholder says EISA was worth the additional cost to gain a "20 to 30 percent" performance boost. He also feels he's "protecting against obsolescence" by buying EISA. When the day comes that Burkholder decides to replace his old 16-bit video card, he expects to find a wide selection of high-performance EISA video boards.

Today he'd choose among a handful of EISA graphics boards. "We've estimated there are between 50 and 100 EISA boards on the market," says Gerald Wineinger, EISA program manager at Texas Instruments in Austin. Most are network adapters and disk controllers.

However, Wineinger expects more choices as EISA PC sales pick up, a shift that will be accelerated by new technologies such as multimedia. "Real-time video cards will need the speed of the EISA bus," he declares. —*Jeff Bertolucci*

Alice LaPlante is a freelance writer based in Palo Alto, California.

The advanced 32-bit EISA bus is gaining ground but will not soon replace the ISA bus. InfoCorp expects IBM's MCA bus to make slower progress.

Acer believes there is room for a different kind of computer company. One that not only offers everything from entry level PCs to 200 person UNIX™ networks, but designs them to grow when you do. Advance when technology does. And work as hard for your money as you do.

For example, Acer invented ChipUp.™ A breakthrough technology that allows you to upgrade a 386SX system to a 486 simply by adding a new chip. It's like buying a new computer for the price of a single chip.

Today, just about *everyone* can use a computer. That's why we make a *computer* for just about everyone.

For people on the go, the AcerAnyWare™ notebook computers pack the power and features of machines

5 times their size–for prices that are less than most other notebooks. There's a full range of high-performance, low-cost models to choose from.

We can also make a lot of people happy all at once. Our 64-bit bus, multiprocessor AcerFrame™ fileservers bring minicomputer performance to your desktop. And they're backed by our 10 years of experience in UNIX systems.

We invite you to see the complete range of Acer computers, including our affordable AcerMate™ line. And ask about our wide selection of AcerView™ monitors, laser printers, keyboards and other peripherals.

Call 1-800-SEE-ACER in the U.S. and Canada and tell us exactly what you need. And then we'll give you exactly what you want.

Acer, the Acer logo, ChipUp, AcerAnyWare, AcerFrame, AcerMate and AcerView are registered trademarks of Acer Inc. and Acer America Corp. UNIX is a registered trademark of AT&T Bell Labs.

Circle 54 on reader service card

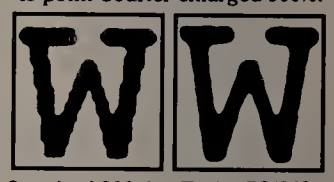
In Tinsel Town, we're the printers to the stars.

Oscar statuette © A.M.P.A.S. ®

When C. David Piña created the graphics for the 63rd Annual Academy Awards, he cast his NewGen™ printer to play a vital supporting role.

Why NewGen? "We print a lot of grey scale, line and type images. NewGen delivers — beautifully. What I see on the screen is precisely what I get. And it's fast too; we don't wait for documents anymore."

Resolution close up,
13 point Courier enlarged 500%.



Standard 300 dpi Turbo PS/840e

With features like Image Enhancement Technology (IET)™, NewGen delivers some of the smoothest lines, characters and curves since Casablanca. Plus, Automatic Recognition Technology (ART)™ which actually selects the right interfaces and emulations for you. "And it's got Program Updating, so my printer stays virtually obsolescense-free. And that's important in this business."

As for NewGen technical support, Piña put it this way, "We've never had problems, only a few questions, and they were there — instantly."

The NewGen line offers a complete cast of PostScript®-compatible printers to fill any role. With resolution from 300 to 1200 dpi plus IET. A range of speeds from 4 to 12 pages per minute. Even paper sizes of up to 11"x 17" for simply unequaled graphics and pre-press capability.

All at prices that will make you a star with accounting.

Piña summed up his choice eloquently. "The NewGen was the only printer that offered everything I needed — with features I couldn't get from anyone else."

To learn more, or for your nearest NewGen Dealer, call 1-800-756-0556. We'll be happy to show you just how well our high-resolution printers can play a leading role in your business.

newgen The Hi-Res People™

NewGen Systems Corporation
17580 Newhope Street, Fountain Valley, CA 92708
Toll Free 1-800-756-0556
Dealer Inquires Welcome

© 1991, NewGen Systems Corporation. NewGen, NewGen Systems Corporation, NewGen logo, Image Enhancement Technology (IET) and Auto Recognition Technology (ART) are trademarks of NewGen Systems Corporation. PostScript is a registered trademark of Adobe Systems, Inc. Academy Awards ®, Oscar ®, and the Oscar statuette are the registered trademarks and service marks of the Academy of Motion Picture Arts and Sciences are used with their permission.

End User Inquiries
Circle 158 on reader service card
For Dealer Inquiries
Circle 159 on reader service card

Compaq Redefines Its PCs

Snappy graphics and blazing speed at an affordable price

by Jeff Bertolucci

Rough-and-tumble competition may have forced Compaq to cut costs and reduce prices, but it's also spurred the company to bring out some of its most innovative products in years. Fresh to market are a powerful graphics controller, a dual-speed 25/50-MHz 486 system upgrade board, new Deskpro/M models based on these boards, and two high-resolution monitors guaranteed to make *Windows* users more productive.

The price tag on products this formidable used to make you gasp. No longer. Compaq wants your business, and its prices prove it.

Topping the list is Compaq's Deskpro 50M, the newest member of the family of compact, modular, EISA-based Deskpro/M's, which feature removable CPU, memory, video, and I/O boards for easy customization. A Deskpro 50M with a single floppy drive and no hard drive will cost about $5000.

Sporting Intel's new 25/50-MHz 486 clock doubler chip on its removable processor board, the Deskpro 50M can boost the performance of processor-intensive applications like spreadsheets by executing instructions at the clock doubler's 50-MHz internal processing speed. However, since the CPU interacts with the rest of the system at a slower 25 MHz, you can't expect 50-MHz performance.

One frequent complaint about the Deskpro/M 486 family involved the lack of a secondary RAM cache on models that rely on the 486's built-in 8K cache. Compaq has silenced its critics by adding a secondary 256K cache on the Deskpro 50M's processor board. The board also features a socket for a Weitek 4167 math coprocessor and comes with a minimum 8MB of RAM, expandable to 64MB.

Want to upgrade your Deskpro 386/25M, 486s/16M, 486s/25M, or 486/33M? Compaq says that you'll be able to replace your old single-speed CPU board with the new clock doubler board. Pricing wasn't set at press time. Compaq is adding a 33-MHz 386 sibling to its Deskpro/M family as well. Prices for the new Deskpro 386/33M will start at just under $3000.

Compaq's dual-speed Deskpro 50M sets a new standard in speed, and its 15- and 17-inch monitors have very high contrast.

ANDY FREEBERG

Top-Notch Graphics

Compaq knows that PCs can't live by processing power alone, so the company is bundling a new high-performance EISA video graphics controller with the Deskpro 50M. Also available in an ISA-bus version for older Compaq systems, the new graphics controller comes with 1MB of video RAM and supports resolutions up to 1024 by 768 and a screen refresh rate of up to 73 Hz. Both the EISA and ISA graphics controllers will be priced at approximately $700, with the ISA version costing slightly less.

Sold separately are two new flat-screen high-resolution monitors that provide you with outstanding clarity as well as an impressive collection of ergonomic features. These 15- and 17-inch (diagonal) models offer resolutions up to 1024 by 768. An excellent .25mm-dot-pitch high-contrast screen makes characters easier to read, and a nonglare coating helps reduce eye fatigue. The 15-inch monitor will cost just under $1000; the 17-inch monitor will be an extra $300 or so.

Jeff Bertolucci is an assistant editor for PC World.

SNAPSHOT

Deskpro 50M model, EISA/ISA graphics board, high-resolution monitors

The Deskpro/M line offers more choices with clock doubler models. Compaq debuts high-resolution boards and monitors.

KEY FEATURES

- **Intel clock doublers**
- **EISA/ISA graphics boards with 1024 by 768 resolution**
- **Two flat-screen monitors with impressive ergonomic features**

AVAILABILITY

Immediate

PRICING

Deskpro 50M $5000 and up, Deskpro 386/33M $3000 and up, monitors $1000 and up, EISA/ISA graphics controllers $700 and up, Systempro with no IDA $5000 and up, with IDA $8800 and up

Compaq Computer Corp.
P.O. Box 692000
Houston, TX 77269-2000
800/231-0900
Reader service no. 843

CHOOSE THE RIGHT TOOL FOR THE JOB.

Every toolbox has a variety of tools. And each one has a different purpose. You wouldn't use a screwdriver to drive a nail, so why use an artistic program to do your technical drawings?

If you need to do artistic illustration, it makes sense to look at one of the artistic programs shown here. But if you do technical illustration, MacDraft's the right tool for you.

MacDraft is designed specifically for architectural/engineering design & drafting and technical illustration. It provides you with a complete scaled drafting environment designed to respond quickly and accurately to the way you think and work. You can create multi-layered drawings and even assign a different scale to each layer to create details. As you switch between layers, MacDraft will automatically display the sizes of objects, dimension lines and area calculations in the units of that particular layer. You can also create custom line styles and store commonly used graphics in user-created symbol libraries.

When it's time to get your technical drawings done, you need a tool designed specifically for the task at hand. You'll find MacDraft's finely crafted drawing tools incredibly easy to use, powerful and amazingly accurate. In addition, most tools provide a number of options that will allow you to tailor the tool to meet your drawing needs. For example, with a simple click of the mouse, you can choose to draw arcs by their radius, any 3 points or even draw an elliptical arc.

So for your technical drawing needs, choose the tool that was designed specifically for the job. MacDraft. For your Macintosh® and now available for Windows.

idd
Innovative Data Design, Inc.

Call Innovative Data Design at 510.680.6818 for more information or to order a Demo Disk.

MacDraft is a registered trademark of Innovative Data Design, Inc. Macintosh is a registered trademark of Apple Computer, Inc. Windows is a trademark of Microsoft Corporation.

Circle 119 on reader service card

Choose Programming in C++ with Windows, PC Troubleshooter, or PC Applications Specialist

Now! NRI training assures your success in three of today's fastest-growing PC career fields

Businesses everywhere promise solid employment prospects for people with the skills to create software for a Windows environment, troubleshoot and service PCs, or evaluate, recommend, and use vital PC software applications. Now, you can prepare for success in today's hottest PC careers with your choice of NRI's three innovative new courses – Programming in C++ with Windows, PC Troubleshooter, or PC Applications Specialist.

1 Get in on today's hottest programming opportunities

Jobs for software developers are booming in the '90's, according to the Bureau of Labor Statistics. And PC experts agree: To create the new software applications required for today's complex computer environments, you need design expertise plus hands-on experience with C++ programming.

Now you can take advantage of today's hottest programming opportunities with NRI's new training — Programming in C++ with Windows. Only NRI shows you how to combine the power of object-oriented C++ with the new freedom and ease of Windows to create in-demand software for business, industry, or personal use.

Get hands-on training with a 386sx-based mini-tower computer system

With NRI, you get hands-on training with a 386sx-based mini-tower computer — yours to train with and keep! Only NRI gives you practical experience with this fully IBM PC/AT-compatible computer system, complete with VGA color monitor, enhanced keyboard and mouse, 40 meg IDE hard drive, and a full meg of RAM.

This state-of-the-art computer system gives you all the memory, speed, and power you need to develop the kind of quality software programs today's employers and consumers demand. But that's just part of your NRI training...

Master object-oriented programming using Turbo C++ for Windows®

NRI's Discovery Learning Method takes you step-by-step from computer basics to advanced programming in C++, today's hottest object-oriented programming language. As you work with Borland Turbo C++ for Windows, you discover for yourself how this in-demand language allows you the freedom to write real-world applications that rival software produced by top-paid design teams — from stand-alone graphics and word processing packages to spreadsheets, text editors, database managers, and more! But that's still not all...

Learn to program for the exciting visual environment of Windows®

With NRI training you take command of today's newest design techniques as you master programming skills for Windows — using both C++ and the built-in functions and routines of your Microsoft Windows software.

As you actually build your own software application, you develop hands-on experience with Windows' easy-to-use features — including graphics, memory management, multitasking, data exchange, and more!

Soon you're ready to use your computer and know-how to create fast, functional programs — complete with on-screen graphics, custom cursors, images, icons, and all the other Windows features you need to build high-performance software that meets today's competitive business needs.

Send for your FREE NRI catalog today!

See other side for two more ways NRI can give you the computer know-how you need for success. →

SEND TODAY FOR YOUR FREE CATALOG!

NRI Schools

McGraw-Hill Continuing Education Center
4401 Connecticut Avenue, NW, Washington, DC 20008

YES! Send me the FREE catalog I've checked and show me how NRI can give me the state-of-the-art computer training I need for advancement, extra income, even a business of my own.

☑ Check one FREE catalog only
- ❑ **Programming in C++ with Windows**
- ❑ **PC Troubleshooter**
- ❑ **PC Applications Specialist**

Other computer career training:
- ❑ Computer Programming
- ❑ Desktop Publishing and Design
- ❑ Bookkeeping and Accounting

Name _____ Age _____

Address _____

City _____ State _____ Zip _____

Accredited Member, National Home Study Council

4543-042

NRI training gives you two more exciting opportunities to make money with your computer

No matter which course you choose — PC Troubleshooter or PC Applications Specialist — your training includes a powerful IBM PC/AT-compatible computer system and valuable software you keep!

2 Earn good money as a PC Troubleshooter

There's no doubt about it: Businesses spend billions of dollars on personal computers each year — *even more* on PC service and support. That means big opportunity for computer pros who can troubleshoot today's PCs —people with the hands-on training it takes to diagnose system failures, replace damaged chips, retrieve lost data, or troubleshoot faulty disk drives and circuit boards.

Now with NRI, you can master the skills you need to make money as a PC troubleshooter and cash in on big opportunities in this top-paying career field.

AT-compatible computer, diagnostic hardware and software included

NRI's step-by-step lessons and unique hands-on Discovery Learning projects show you how to localize PC problems, identify faulty components, recommend system configurations, and replace the damaged parts that cause PC system failures — plus much more!

Best of all, you get hands-on experience with a powerful AT-compatible computer, 40 meg IDE hard drive, and professional diagnostic hardware and software — all included in your course. Using PC Tools, an invaluable diagnostic software package, you get a hands-on understanding of the special utilities that make correcting software and data problems easy and profitable — everything from hard disk backup to data recovery, disk and file management, even virus and memory loss protection. But that's not all...

Rounding out your training, you get professional troubleshooting experience using your Ultra-X R.A.C.E.R. plug-in diagnostic card and QuickTech menu-driven software to test the system RAM and uncover the problems that can occur with PC motherboards and peripheral adapters.

By the time you complete your course, you have the skills and the software you need to make money as a PC troubleshooter. Send for your FREE NRI catalog today!

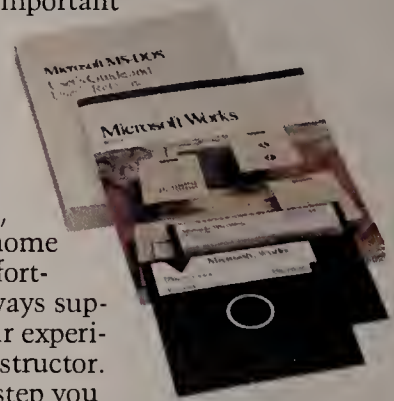
3 Become today's in-demand PC Applications Specialist

Organizations everywhere are paying top dollar for computer pros who can use word processing, database management, spreadsheet, and data communications software. In fact, today's PC-driven business world has given rise to a *new* breed of computer professional: the PC applications specialist.

Now, you can become this sought-after expert — on the job or in a business of your own. Only NRI gives you a powerful computer system plus the hands-on experience you need to succeed.

Train with and keep an AT-compatible computer system and Microsoft®Works™

Even if you've never worked with computers before, with NRI you master the real-world skills you need to make good money as a PC applications specialist. Easy, step-by-step lessons and hands-on training with a powerful AT-compatible computer system, MS-DOS, and Microsoft Works software – all included in your course – give you the important computer skills behind today's most in-demand business applications.



With NRI, you train at home and at a comfortable pace, always supported by your experienced NRI instructor. Step by easy step you learn not one or two, but *four* essential PC applications. Using your computer and Microsoft Works software, you master word processing, database management, spreadsheets, and data communications with confidence and ease. You even learn to install and use your mouse for quick-click access to the menu commands that save you time and effort when working with today's business applications.

Get the skills, the computer, and the software you need to start a money-making new career as a PC applications specialist. Send for your FREE NRI catalog today!

FREE catalog tells more!

Get all the facts about NRI training in your choice of three high-growth computer fields: Programming in C++ with Windows, PC Troubleshooter, or PC Applications Specialist. If the card is missing, write to NRI Schools, McGraw-Hill Continuing Education Center, 4401 Connecticut Avenue, NW, Washington, DC 20008.

SEND TODAY FOR YOUR FREE CATALOG!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

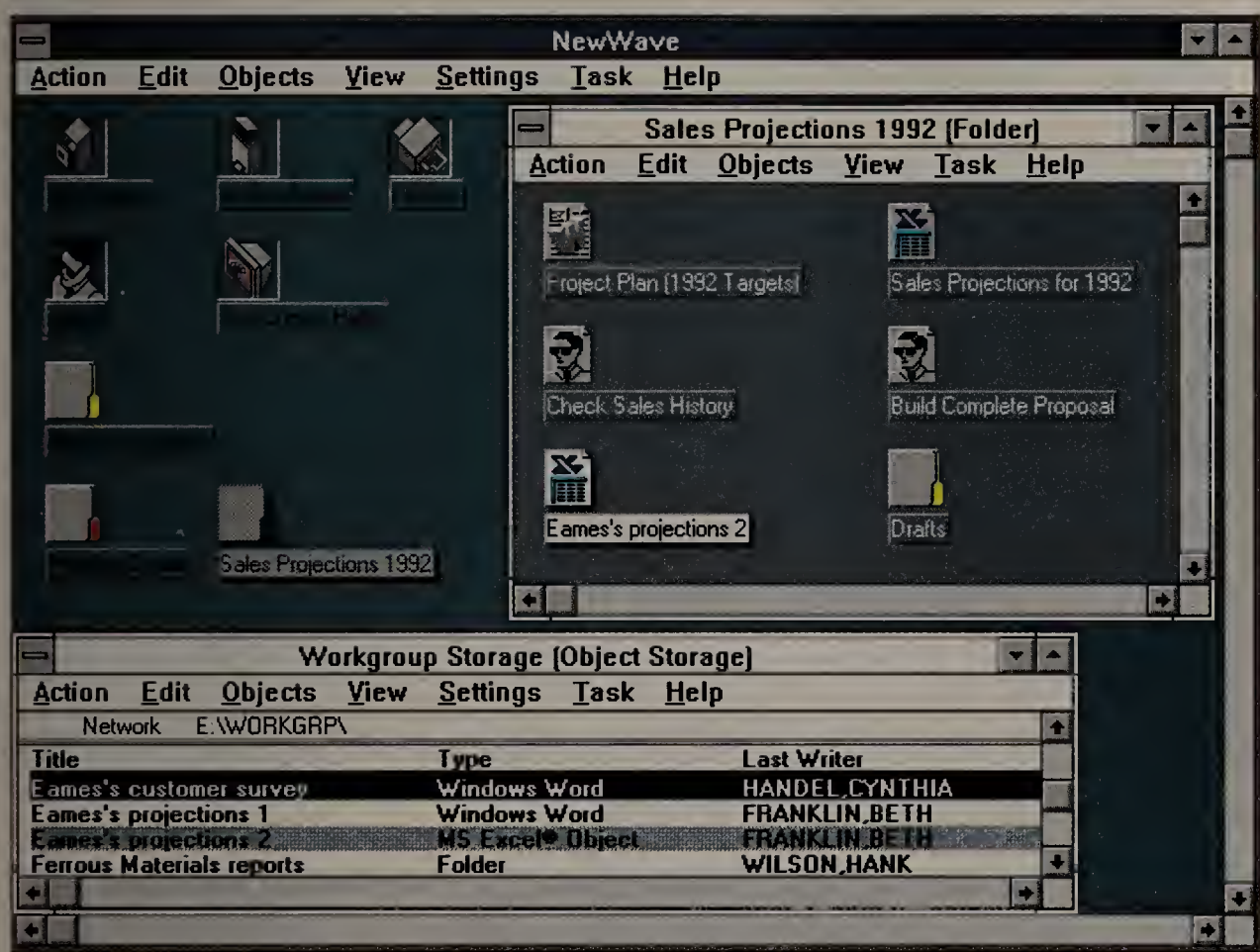
FIRST CLASS MAIL PERMIT NO. 10008 WASHINGTON, D.C.

POSTAGE WILL BE PAID BY ADDRESSEE

NRI SCHOOLS
McGRAW-HILL CONTINUING EDUCATION CENTER
4401 CONNECTICUT AVENUE, NW
WASHINGTON, DC 20078-3543

Get Power Windows With HP's Enhanced NewWave 4.0

HP improves NewWave with new functions that simplify everyday tasks, while giving Windows a power boost.



NewWave incorporates Windows' OLE standard and a task management approach to computing.

by Robert Lauriston

NewWave has a reputation as a tool for big corporations that need to build custom *Windows*-based systems, but Hewlett-Packard says that reputation is undeserved. According to HP, its main mission is to make life easier for *Windows* users by offering them a Mac-style desktop, easy customization, and vastly improved file management.

You don't need special *NewWave* apps anymore to take advantage of *NewWave*'s OLE features, because *NewWave*'s slick document embedding features now use *Windows'* OLE standard. That enables all OLE supported applications to benefit from *NewWave*'s capability to embed objects, such as an application and an associated file, or a template that includes files created by a variety of applications. Thanks to OLE, you could access *Excel* features from a word processing file by clicking on an embedded *Excel* chart.

NewWave's improvements to *Windows* make it worth the consideration of any *Windows* user. It provides enhanced application integration, extended file names, work group file management features, and a powerful task automation feature—*agents*—that makes *Windows'* macros look comparatively anemic.

Double-Duty Desktop

NewWave's approach to file and program management is totally unique. Say you want to create a new *Excel* spreadsheet: In *Windows*, you have to open the Program Manager, double-click on the *Excel* icon, then select *File • New* from *Excel*'s menus. HP reverses this process: You choose *Objects • Create a New* from *NewWave*'s desktop menu, then select the kind of object you want to create.

Long document and folder names are a big *NewWave* plus. You can use as many as 32 characters to write file names, a latitude that's particularly helpful when sharing files on a crowded network.

Agents: Macros on Steroids

NewWave's macros, or agents, are sophisticated tools for automating simple or complex *Windows* tasks. On the most basic level, you can record a series of keyboard and/or mouse commands for playback. Want to get fancier? Record tasks that involve multiple programs, add dialog boxes, or use the programming language (backed up by an on-line reference guide) to create macros that respond to changing conditions.

With its support for Microsoft's OLE standard, *NewWave* opens *Windows* to new vistas. Combined with its other enhancements, extended file names, powerful agents, and objects, *NewWave* lets you organize your desktop to suit the way you work—by task rather than by application.

Robert Lauriston is a contributing editor for PC World.

SNAPSHOT

HP NewWave 4.0

HP's alternate desktop manager for Windows is easier to use than ever.

KEY FEATURES

- **Drag-and-drop program and document management**
- **Long document names**
- **Sophisticated macros**
- **Network document "checkout"**

AVAILABILITY

Within 30 days after Microsoft ships Windows 3.1

PRICING

$195

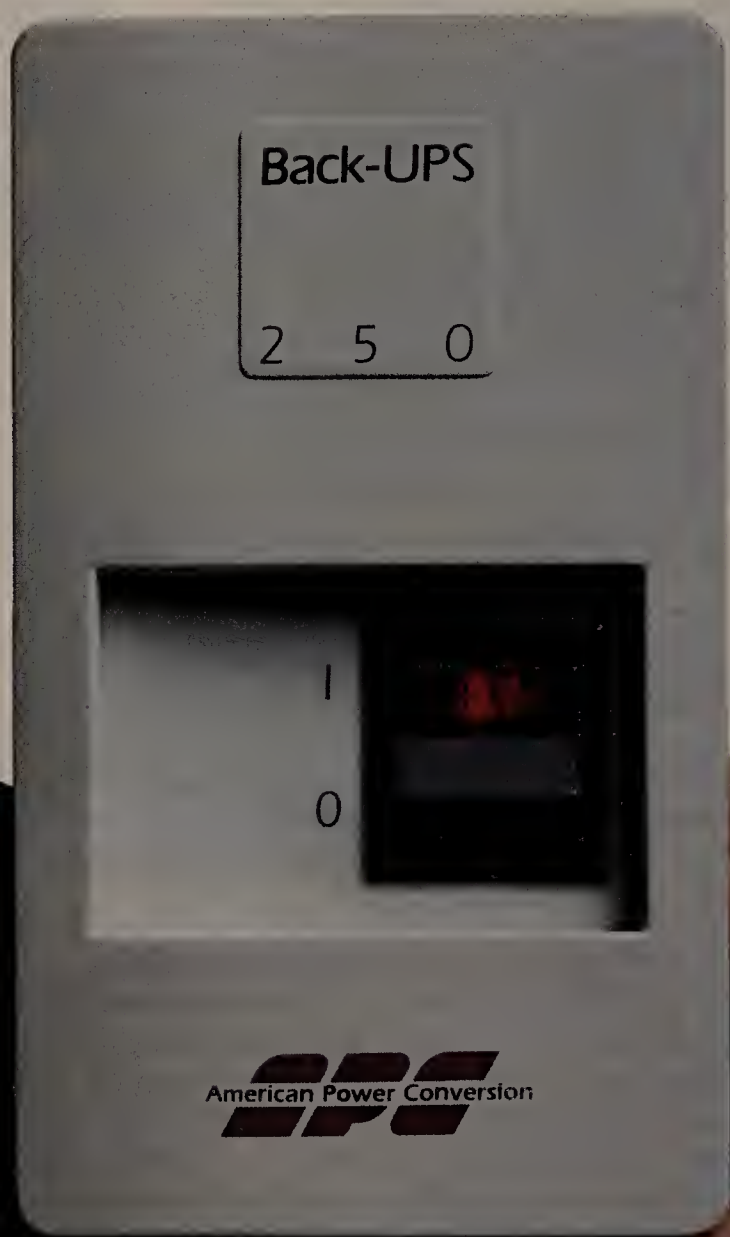
Hewlett-Packard
NewWave Program
974 E. Arques Ave.
Sunnyvale, CA 94086
800/554-1305
Reader service no. 840

Get a hold of the best value in LAN power protection for just $169 suggested list price

Blackouts, brownouts, sags... Your data and hardware are vulnerable to problems that surge suppressors and power directors are just not equipped to handle.

Now there's a complete Uninterruptible Power Supply solution to suit any budget. The Back-UPS™ 250 is reliable protection for LAN nodes, 386SX machines, 286, small PS/2 systems, and internetworking hardware such as routers, bridges, gateways and hubs.

From the largest server to the smallest router, the Back-UPS Series will increase your productivity by providing a cost-effective solution to power problems. **Call for your free power protection handbook.**



The **NEW Back-UPS 250** offers even more cost-effective protection for LAN nodes (typical runtime for a 386SX system is 10 minutes).

Computer Reseller News Editors' Choice

- Full-time surge protection and line filtering
- Models from 250 to 1200 Volt-Amps, many with LAN interface for automatic-shutdown of Novell, LAN Manager, LAN Server, LANtastic, Banyan, SCO Unix, SunOS, AIX etc.
- UL, CSA and Novell approved with a 2 year warranty
- 230V models available
- Ask about PowerChute® UPS monitoring software and Novell-compatible UPS monitoring boards

LAN TIMES Readers' Choice 1990 · LAN TIMES Readers' Choice 1991

	Model	Application	List
NEW!	Back-UPS 250	386SX, 286, XT, AT, internet hardware, POS	$169
NEW!	Back-UPS 400	Desktop 386, 486 systems, 286 servers	$249
NEW!	Back-UPS 450	Tower 386, 486 systems, servers	$329
NEW!	Back-UPS 600	Heavily configured systems, CAD/CAM workstations	$449
	Back-UPS 800RT	Multiple systems, longer runtime applications	$899
	Back-UPS 1200VX	Multiple systems, LAN hubs, small minis, telecom equipment	$1199

The Back-UPS™

by American Power Conversion

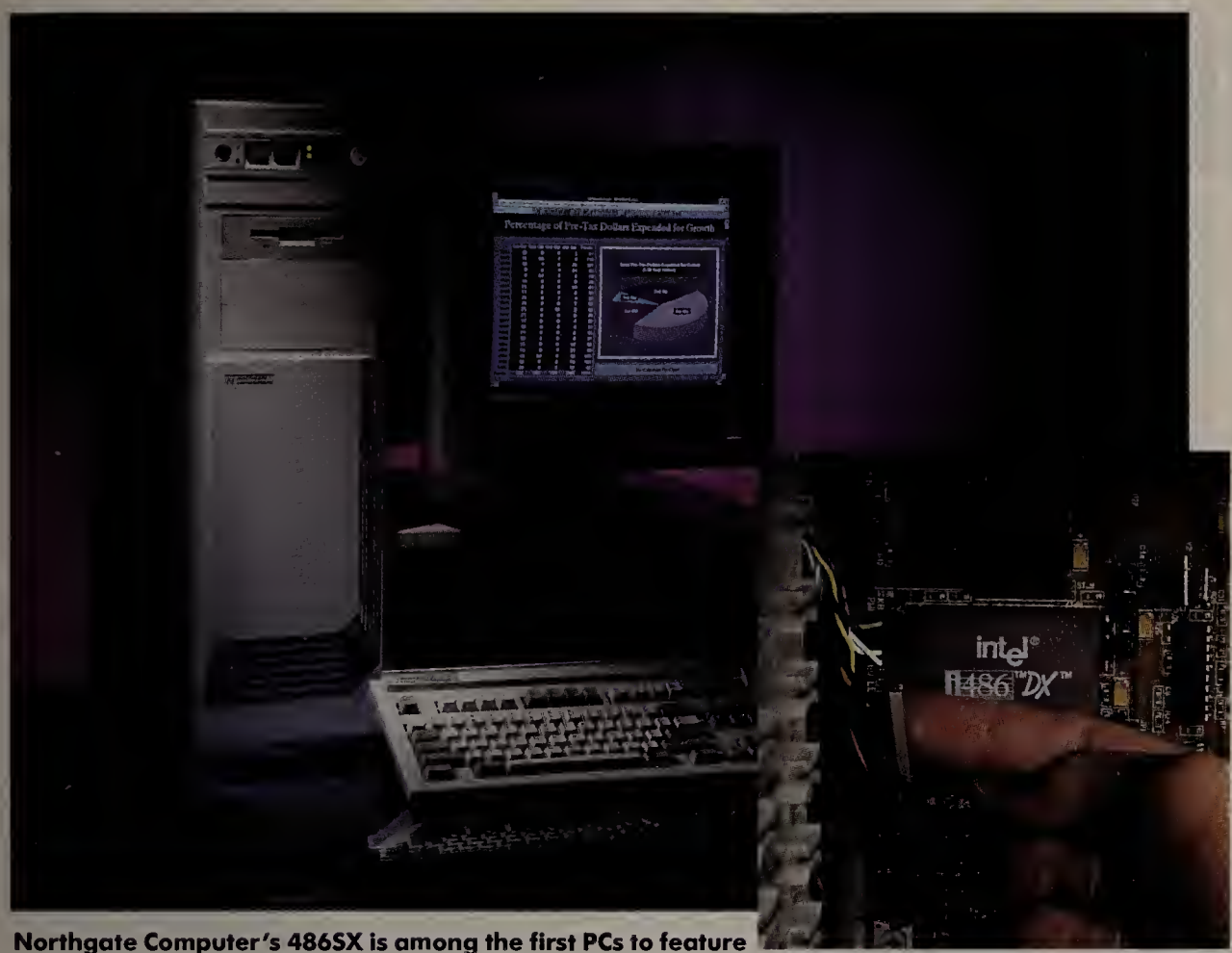
800-800-4APC, Dpt.P3

33-1-60178400 in Europe

Circle 45 on reader service card

Northgate's Upgradable 486SX

Elegance ZXP systems feature inexpensive chip and clock swap-up for unsurpassed future value.



Northgate Computer's 486SX is among the first PCs to feature the Zero Insertion Force socket, which lets you effortlessly and inexpensively upgrade processors.

LUIS DELGADO

by Michael Goodwin

With more business users insisting on a CPU upgrade path, system vendors are dreaming up a variety of ways to supply one. Northgate Computer Systems offers one of the most elegant options with an easy, inexpensive chip upgrade that lets you simply pop out the CPU and drop a faster one in its place.

If you've been down the upgrade path before, you may roll your eyes at the words "pop" and "drop," knowing all too well how much force it takes to wrench a 168-pin 486 chip from its socket, and how hard it is to insert a replacement without damaging it or the motherboard.

Fortunately, Northgate knows too, and has responded with a Zero Insertion Force (ZIF) socket built onto the Elegance ZXP's motherboard. When the time comes to swap up, you raise a small lever next to the socket and the old chip lifts out effortlessly. You can slip its replacement in just as easily, and lowering the lever locks it into place. Moving the jumper tells the multispeed system clock synthesizer chip how fast to run.

Moving Up and Up and Up . . .

The Elegance starts out as an unusually affordable 16-MHz 486SX system: With 4MB of RAM (expandable to 32MB), a 64K external memory cache, a Weitek coprocessor socket, a 100MB hard drive, and a 14-inch super-VGA (1024 by 768) monitor, it will set you back a mere $2349. When the need for more processing punch overwhelms you, swap up to a 486SX/20, a 486SX/25, or a full-fledged 486DX/33, or even one of Intel's clock-doubler chips, which means you can boost the CPU's internal speed as high as 66 MHz.

While Northgate sells the Elegance ZXP with any one of the four CPUs standard, it doesn't sell the upgrade chips as separate items, so you will have to buy them on the open market. That's good because you'll pay market price—from $300 to $800, depending on the CPU—but it also means you probably won't get a trade-in on your old CPU.

Alternatively, if you know you're going to want more processing power right off the bat, you can start at the top with the 33-MHz Elegance for a scant $450 more than the entry model.

Perhaps the most tempting way to enhance your Elegance is Orchid's Fahrenheit 1280 video board, which speeds *Windows* block-transfer graphics functions so screen updates *fly*. Orchid claims that for most people *Windows* screen updates will run four times as fast. The Fahrenheit board costs only $100 more than the ZXP's standard video board—making it virtually irresistible. You also have a choice of tower or desktop configurations.

Northgate's first-rate service and support package includes a year of free on-site service (via NCR) and 24-hour toll-free tech support.

Michael Goodwin is an associate editor for PC World.

SNAPSHOT

Elegance ZXP

This 486SX system provides a painless and affordable upgrade path thanks to its easy-out, easy-in ZIF socket.

KEY FEATURES

- **Zero Insertion Force (ZIF) CPU socket**
- **Multispeed system clock**
- **Choice of 486SX/20, 486SX/25, 486DX/33 processors for upgrade**

AVAILABILITY

Immediate

PRICING

486SX/16 with 4MB RAM, 100MB hard drive, 1024 by 768 VGA and 14-inch color monitor $2349; 486SX/20 $2399; 486SX/25 $2699; 486DX/33 $2799; Orchid Fahrenheit video board $100; Vertical Power tower case $150

Northgate Computer Systems, Inc.
7075 Flying Cloud Dr.
Eden Prairie, MN 55344
800/548-1993,
612/943-8338 (fax)
Reader service no. 850

SORRY, HP. NEC WINS BY A TECHNICAL KNOCKOUT.

Introducing the lowest priced fully-configured PostScript® printer.

FEATURES	Hewlett-Packard LaserJet III	Okidata OL830	Texas Instruments MicroLaser Turbo	NEC Silentwriter Model 95
PostScript Language Level 2	N/A	N/A	Yes	**Yes**
LaserJet III Emulation (PCL5)	Yes	No	No	**Yes**
Automatic Emulation Switching	No	Yes	Yes	**Yes**
Enhanced Resolution Technology	Yes	No	No	**Yes**
Automatic Interface Monitoring	No	No	No	**Yes**
Envelope Feeder & Cassette	No	No	No	**Yes**
Suggested List Price	$2495	$1995	$2249	**$1749**

For more information, dial 1-800-NEC-INFO (in Canada, 1-800-343-4418). For immediate information via fax, call NEC FastFacts at 1-800-366-0476 and request #SWM95.

PostScript is a registered trademark of Adobe Systems, Inc. Silentwriter is a registered trademark of NEC Corp. MS-DOS is a registered trademark of Microsoft Corp. Mac is a registered trademark of Apple Computer, Inc. LaserJet is a registered trademark of Hewlett-Packard, Inc. MicroLaser is a trademark of Texas Instruments, Inc. Okidata is a registered trademark of Oki America, Inc. © 1992 NEC Technologies, Inc.

THE NEC SILENTWRITER® MODEL 95

Talk about flaaring the campetitian! Now there's a laser printer that's fully configured for both MS-DOS® and Mac® platfarms...that delivers remarkably sharp output... and does it all at the lawest price an the market. The fact is, the NEC Silentwriter Madel 95 packs mare features than any laser printer in its class. Yet it starts at a price the athers bargain dawn ta! That's just plain hanest. Even mare impartant, it lets yau concentrate on what caunts: great output that makes you laak great. Laak, yau know yaur business. Make yaur awn camparisans. Check specs, prices, quality. Once yau're ready ta hand dawn yaur decision...you'll agree it's no cantest.

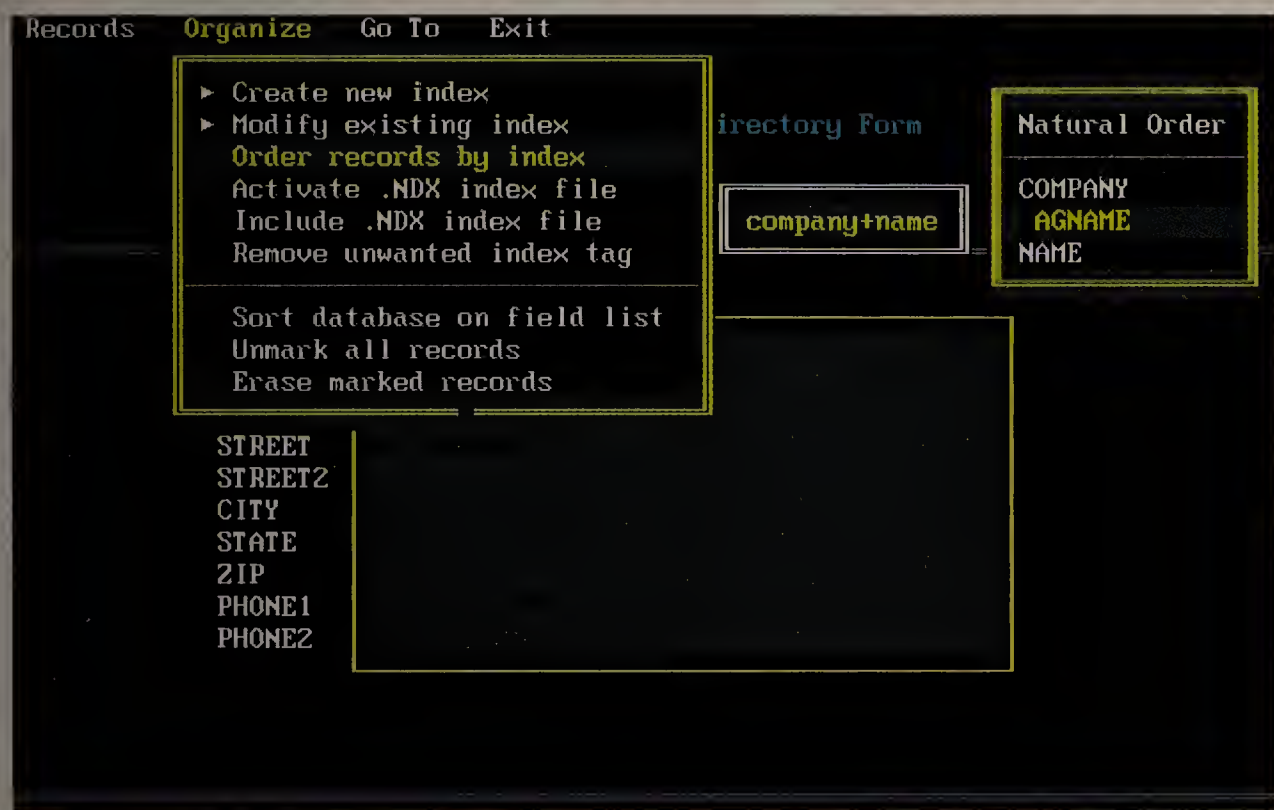
Because ↑ is the way you want to go. **NEC**

C&C Computers and Communications

Circle 182 on reader service card

dBASE IV 1.5: Refining an Industry Standard

This long-awaited upgrade speeds up dBASE and brings it into the nineties with mouse support, a more powerful QBE feature, and improved programmability.



dBASE IV 1.5 adds mouse support and an improved query-by-example (QBE) feature.

by Mark Brownstein

The first thing you'll notice about *dBASE IV 1.5* is mouse support. Second is snappier performance; third an improved Control Center and query by example (QBE); and fourth, *dBASE* really hasn't changed all that much.

Borland hasn't done anything revolutionary to *dBASE*, which it acquired when it bought Ashton-Tate last year, but it has refined the product with a number of long-awaited enhancements.

Programmers will be pleased because the new version has some improvements they've been hoping for, such as the capability to open 40 work areas and perform conditional compiles. All users will appreciate the cleanup job Borland has done by eliminating the bugs from earlier versions. And a new SET KEY command lets you filter an index expression, a capability that's been sorely needed.

But if you're looking for a graphical user interface and a taste of the exciting changes promised for the *Windows* version Borland's been promoting at trade shows, you'll be disappointed.

Still, you do get mouse support, although if you're used to *Windows*, you'll be surprised at how primitive and inconsistent it is. To move the cursor to a menu option, for instance, you have to first move the pointer (a block on screen) to where you want to place the cursor, click, and the cursor moves. Neat, huh?

If you actually want to do something once the cursor is positioned, you have to click the mouse a second time to activate the selected option. The mouse's behavior varies depending on what it's doing. In the Form design screen, clicking a third time brings up a Fields pick list; when you're designing a report, a third click may close a design band.

Query by example is also enhanced. You can include related options in a selectable pick list, perform group analysis of calculated fields, and delete calculated fields one at a time rather than all at once. New indexing options also provide more speed and usefulness. For instance, you can set *dBASE* to add files and to update the index only after all files have been added. Moreover, you can save indexes created for a query so that you can find fields in an indexed data file without having to rebuild the index—a time-saver particularly appreciated by network users.

The Control Center looks the same, but now you can shrink *dBASE* to a 10K TSR and launch another application—a better report writer, a different text editor, or maybe even an application generator that completely replaces the Control Center—and return to *dBASE* once you're done with that application.

dBASE IV 1.5 is a solid version of a program designed in 1986 and 1987. It has features developers will appreciate but lacks the more attractive look and feel promised in its upcoming (*Windows*) version.

Mark Brownstein is the Los Angeles bureau chief for InfoWorld.

SNAPSHOT

dBASE IV 1.5

Borland tweaks dBASE, adding mouse support and improving query by example.

KEY FEATURES

- **Capability to open 40 work areas**
- **Capable of conditional compiles**
- **New indexing options**
- **Enhanced QBE**
- **Capable of launching applications from the Control Center**

AVAILABILITY

Immediate

PRICING

$795, upgrade from all previous dBASE versions $100

Borland Int'l
1800 Green Hills Rd.
Scotts Valley, CA 95067
800/331-0877,
408/438-8400
Reader service no. 841

ZEOS
ZEOS
386SX

SPEED, SOFTWARE, COLOR VGA & MORE ONLY $1995!

Your new ZEOS 386SX-20 is ready to ship to you today! We've loaded it up and priced it right. With memory, software, drives and more!

Your new ZEOS 386SX-20 comes complete with 4MB of ultra-high speed, zero-wait 53ns RAM, *plus* our 107 megabyte hard drive, *plus* both floppies, *plus* our 1024 x 768 non-interlaced VGA color monitor offering over 32,000 simultaneous colors (drawn by the awesome 1MB SpeedStar Hi-Color card)!

And at only $1995, that's just for starters. Because we're also giving you Microsoft Windows, Lotus 1-2-3 for Windows and Ami Pro 2.0!

Your ZEOS 386SX also includes the most advanced SX motherboard available. We've not only added incredibly fast DRAM, we've also integrated the hard and floppy drive controllers *plus* the serial, parallel and game ports *right on the motherboard!* This gives you even greater reliability *and* expandability.

ZEOS® 386SX-20. Loaded. Only $1995!

SAME DAY SHIPPING! Call for Details.

For instance, your new system comes with our custom 200 watt power supply and seven-bay SpaceSaver desktop case. You save space and still have room to expand! And the components in your system will last longer because we give you not just one, but *two cooling fans.* After all, the cooler your system runs, the longer it lasts. Now that's value.

ZEOS SX SYSTEMS RATED #1

Your ZEOS 386SX-20 comes from a family of award-winning *Editors' Choice* '386 systems. Recently, ZEOS systems received the #1 SX rating in *PC Magazine's* Service and Reliability issue. When you receive your new ZEOS 386SX you'll see why we rated #1.

24-HOUR-A-DAY TOLL-FREE TECHNICAL SUPPORT AND MORE!

You also receive our legendary 24-Hour-A-Day Toll-Free Technical Support. Plus our full 30-Day Absolute Satisfaction Money-Back Guarantee, One Full Year Limited Warranty and Express Parts Replacement Policy. No one offers you more.

Performance. Quality. Price. Support. These are the hallmarks that have made ZEOS the choice of over 100,000 satisfied customers in more than 70 countries and what makes ZEOS *your* best choice as well. You're going to be very satisfied. We don't just say it. *We guarantee it.*

ORDER NOW TOLL FREE: 800-423-5891

Order your new ZEOS 386SX now with confidence. Your choice of ZEOS quality is guaranteed. *Call us now, toll-free, 800-423-5891.*

All prices and specifications are subject to change without notice. Please call for current pricing and warranty details. ZEOS is a publicly traded company, NASDAQ Symbol: ZEOS. © 1992 ZEOS International, Ltd., 530 5th Avenue, N.W., St. Paul, MN 55112. All product and company names are trademarks or registered trademarks of their respective holders.

Circle 316 on reader service card

ALL THIS FOR ONLY $1995!

- '386SX-20 CPU, 8/20MHz.
- 4MB high-speed 53ns RAM providing true zero-wait state performance.
- 107MB ultra-fast IDE hard disk drive.
- Teac® 5.25" 1.2MB and 3.5" 1.44MB floppy drives.
- Diamond SpeedStar Hi-Color VGA graphics card with 1MB RAM and Sierra DAC. (32,000+ colors) plus WinRIX drawing software!
- ZEOS 14" 1024 x 768 non-interlaced VGA color monitor.
- ZEOS/RS 101 key SpaceSaver keyboard.
- Two serial, one parallel and one game port.
- 6-16, 2-8 bit expansion slots; 80387SX math co-processor support.
- Rugged ZEOS 7-bay SpaceSaver case with our 200 watt power supply and two cooling fans for added reliability and product life.
- Microsoft Mouse.
- MS-DOS 5.0 with QBasic.
- Microsoft Windows 3.0, Ami Pro 2.0 Word Processor with Adobe Type Manager and Lotus 1-2-3 for Windows Spreadsheet.
- ZEOS 24-hour-a-day toll-free Technical Support and Customer Satisfaction Package.

Options Galore: Including more memory, an incredible selection of hard drives (SCSI, IDE, ESDI, RLL or MFM) and virtually any other add-on you could want. Ask about other special money-saving packages too!

ORDER NOW TOLL FREE
800-423-5891

FAX Orders: 612-633-1325
Government/Education: 800-245-2449
GSA# 00K91AGS5176
Outside U.S. and Canada: 612-633-6131
MasterCard, VISA, Discover, Am Ex, Z-CARD and COD.
Open 24 Hours a Day, 365 Days a Year!

ZEOS INTERNATIONAL, LTD.

When Buyers Rate ZEOS:

Support: How Mail-Order Vendors Stack Up

What Buyers Say	CompuAdd Corp. *CompuAdd 325* (with 32K-byte cache) $2,881	Dell Computer Corp.* *Dell System 325P* (no cache) $3,144	Gateway 2000 *Gateway 2000 25MHz 386* (with 80M-byte hard drive, 32K-byte cache) $2,090	Northgate Computer Systems Inc. *Northgate Elegance 386/25* (with 64K-byte cache) $2,839	Zeos International Ltd.* *Zeos 386-25* (includes AmiPro, 1-2-3 for Windows, no cache) $2,540
How long does it take to get a support representative on the phone? (most frequent answer)	1 to 5 minutes	1 to 5 minutes	more than 30 minutes	1 to 5 minutes	1 to 5 minutes
Technical competence of support representative (10 is best)	7.5	8.1	8	7.8	8.1
How long does it take for the vendor to solve your problem? (most frequent response)	Immediate	1 to 2 days	2 days or more	Immediate	Immediate
If your job depended on it, would you recommend buying more PCs from this firm?	12 yes 1 no	13 yes 2 no	12 yes 2 no	10 yes 5 no	15 yes 0 no
Overall rating for service and support (10 is best)	8.3	7.8	7.5	7.8	8.6

NOTES: Customer satisfaction results were compiled from PC Week's survey of PC managers whose organizations have purchased mail-order PCs. 15 customers of each vendor were surveyed.

Prices and specifications shown were supplied by vendors, each of which was asked for a quote on its lowest-priced 25Mhz 386 machine with 4M bytes of RAM, dual floppies, a 100M-byte hard drive, 14-inch Super VGA monitor, keyboard, mouse, Windows and DOS 5.0. Any changes to the configuration or no-cost options are shown. Prices were gathered by calls to each vendor between Oct. 3 and Oct 14, and include tax and shipping charges.

*System is upgradable.

Chart Reprint from October 21, 1991 issue of PC Week. Reprinted by permission.

ZEOS Rates #1

There's no reason to buy anything else.

800-423-5891

Circle 311 on reader service card

The Gateway 2000 33-MHz 386 and TI TravelMate 2000 were the most aggressively priced desktop and portable PCs in the January survey by International Data Corporation.

Best-Sellers

Leading PCs sold through traditional dealer channels

1. *IBM PS/2 Model 55 SX*
2. *IBM PS/2 Model 70 (20 MHz)*
3. *Compaq LTE 386s/20*
4. *IBM PS/2 Model 57 SX*
5. *Compaq LTE/286*
6. *IBM PS/2 Model 35 SX*
7. *NEC PowerMate SX, SX/20*
8. *Compaq Deskpro 386/25M*
9. *IBM PS/2 Model 40 SX*
10. *Compaq Deskpro 386s/20*

At year-end, IBM and Compaq regained their domination of sales through the dealer channel, according to Storeboard/ Computer Intelligence's December survey.

BARGAINS OF THE MONTH

Over the Counter

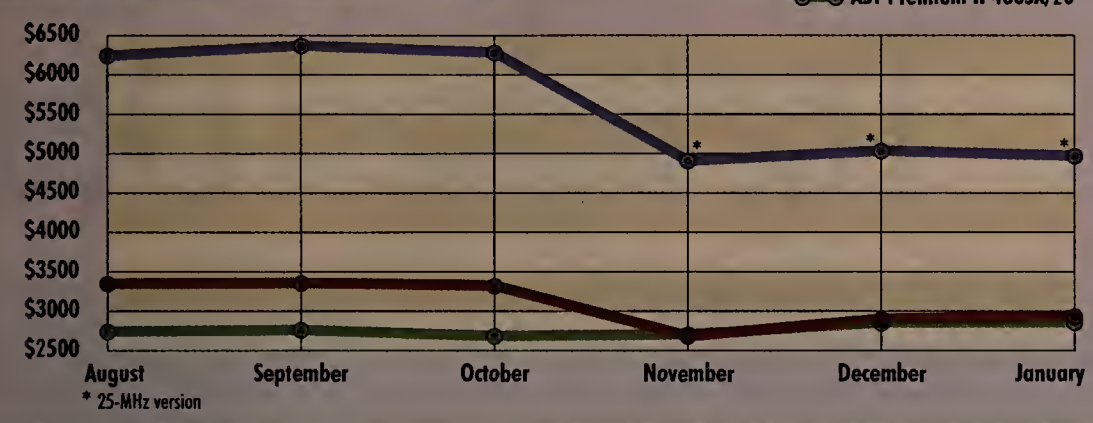
What you pay at retail stores for popular PCs

	Configuration				National				
	Speed (MHz)	RAM (MB)	Hard disk (MB)	Video adapter	List	Average	Boston	Chicago	Dallas/ Ft. Worth
80386SX-based desktop PCs									
AST Bravo 386SX/20	20	2	40	VGA	$1695	$1399	$1419	$1427	$1387
Compaq Deskpro 386s	16	2	40	VGA	$2299	$1898	$1871	$1924	$1987
Compaq Deskpro 386s/20	20	2	60	VGA	$2599	$2170	$2119	$2184	$2292
Dell System 320 SX	20	2	40	VGA	$1400	$1400	$1400	$1400	$1400
IBM PS/2 Model 35 SX-043	20	2	40	VGA	$2525	$1925	$2058	$1908	$1905
IBM PS/2 Model 55-041	16	4	40	VGA	$2745	$2022	$2068	$1942	$2196
NEC PowerMate SX/20i	20	2	60	VGA	$2049	$1628	$1630	$1581	$1614
80386DX-based desktop PCs									
AST Premium II 386/33	33	4	210	VGA	$3795	$3099	$3170	$3017	$3137
Compaq Deskpro 386/33L	33	4	120	VGA	$6199	$5156	$5008	$5103	$5198
Dell System 333P	33	4	100	VGA	$2400	$2400	$2400	$2400	$2400
Epson Equity 386/25 Plus	25	2	100	VGA	$3199	$2414	$2384	$2417	$2411
Gateway 2000 33-MHZ 386	33	4	200	VGA	$2020	$2020	$2020	$2020	$2020
IBM PS/2 Model 70-A16	25	4	160	VGA	$5475	$4084	$4462	$4046	$4380
80486SX-based desktop PCs									
ALR BusinessVEISA	20	5	120	none	$3495	$2931	$3024	$2933	$2913
AST Premium II 486SX/20	20	4	80	VGA	$3495	$2853	$2847	$2908	$2832
IBM PS/2 Model 90XP-OH9	25	4	160	XGA	$6545	$4967	$5335	$5332	$4974
80486DX-based desktop PCs									
AST Premium II 486/33	33	4	210	VGA	$5495	$4438	$4350	$4415	$4375
Compaq Deskpro 486/33M	33	4	340	VGA	$7199	$5983	$5775	$5781	$6051
IBM PS/2 Model 90 XP-OKF	33	8	400	XGA	$12,495	$9599	$10,184	$9648	$9489
NEC PowerMate 486/33e	33	4	300	none	$6349	$4940	$5076	$4640	$5230
Portables/laptops									
AST Premium Exec 386SX/20	20	2	40	VGA-LCD	$2395	$2059	$2068	$2083	$2029
AST Premium Exec 386SX/25	25	4	80	VGA-LCD	$3295	$2867	$2962	$2808	$2900
Compaq LTE/286	12	640 K	20	CGA-LCD	$1949	$1509	$1552	$1570	$1372
Compaq LTE 386s/20	20	2	30	VGA-LCD	$3599	$3067	$2895	$3159	$2900
Dell System NX20	20	2	60	VGA-LCD	$2499	$2499	$2499	$2499	$2499
IBM PS/2 Model L40 SX	20	2	60	VGA-LCD	$3645	$2903	$2779	$2933	$2916
NEC UltraLite 286F	12	1	20	CGA-LCD	$2199	$1451	$1457	$1683	$1517
TI TravelMate 2000	12	1	20	VGA-LCD	$1199	$999	$976	$984	$996
Toshiba T2000SX	16	1	40	VGA-LCD	$2699	$2233	$2310	$2305	$2221
Toshiba T2000SXe	20	2	60	VGA-LCD	$3299	$2736	$2836	$2827	$2606

From an IDC survey of more than 180 computer dealers in eight metropolitan areas. Figures based on at least four price quotes for each machine. Prices are based on manufacturer's standard configuration without monitor.

Trend Line: 486SX PCs Fight Price Erosion

National average street price for selected 486SX desktops



Intel launched its 486SX chip with much ballyhoo last spring as an inexpensive entry-level platform for power PCs. Despite general PC price pressures and competition from a blizzard of even newer CPU alternatives, manufacturers—especially those such as AST and ALR, which brought out extremely aggressively priced machines—have held the price line fairly steadily into early 1992.

Metropolitan

Los Angeles	Miami/ Ft. Lauderdale	New York	San Francisco Bay Area	Washington, D.C.
$1373	$1343	$1371	$1396	$1401
$1887	$1987	$1811	$1899	$1904
$2123	$2196	$2058	$2366	$2148
$1400	$1400	$1400	$1400	$1400
$2025	$1793	$1860	$1822	$2051
$2043	$1903	$2019	$1983	$2058
$1628	$1584	$1670	$1656	$1629

$3089	$3117	$3086	$2797	$3154
$5167	$5271	$4959	$5420	$5233
$2400	$2400	$2400	$2400	$2400
$2474	$2224	$2381	$2437	$2455
$2020	$2020	$2020	$2020	$2020
$4004	$3872	$3907	$4027	$4144

$2929	$3123	$2748	$2876	$3008
$2831	$2804	$2795	$2823	$2861
$4998	$4511	$4663	$4756	$5143

$4451	$4253	$4496	$4648	$4490
$6007	$6084	$5860	$5903	$6143
$10,132	$8935	$8818	$9254	$10,322
$5185	$4903	$4798	$4776	$4281

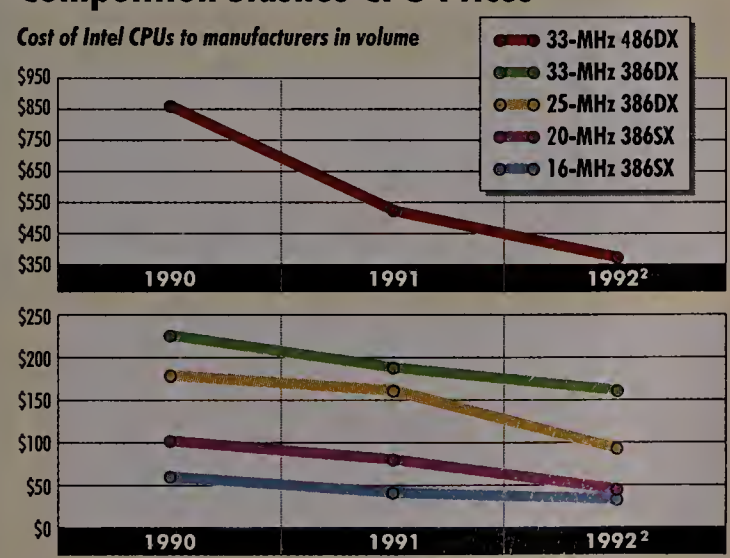
$2040	$2098	$2001	$2113	$2127
$2771	$2783	$2763	$3016	$2743
$1462	$1541	$1256	$1812	$1658
$3103	$3018	$2999	$3119	$3091
$2499	$2499	$2499	$2499	$2499
$3055	$2770	$2813	$2976	$2944
$1813	$1319	$1188	$1238	$1405
$991	$1003	$910	$1441	$966
$2281	$2171	$2115	$2222	$2320
$2980	$2631	$2656	$2685	$2838

PC Futures: A Momentary Price Plateau

PC prices were generally holding firm early this year after substantial price cuts in 1991, buoyed partly by signs that sales are rising slightly. The Gateway 2000 33-MHz 386 again claims the title of desktop Bargain of the Month,[1] while TI's TravelMate 2000 is the portable Bargain of the Month. IBM and Compaq regained their dominance on the best-seller lists, with some of IBM's newer SX machines climbing the charts along with one of Compaq's new modular line, in its first appearance. Pricing on 486SX desktops has held surprisingly steady since their debut in spring 1991, partly because they often arrived with prices significantly discounted to compete against 386s. However, costs of Intel chips generally dropped quickly in the past year—even in the 486DX market, where Intel holds a monopoly. This lower component cost has translated into substantial savings on PCs, especially higher-end models.

Competition Slashes CPU Prices

Cost of Intel CPUs to manufacturers in volume



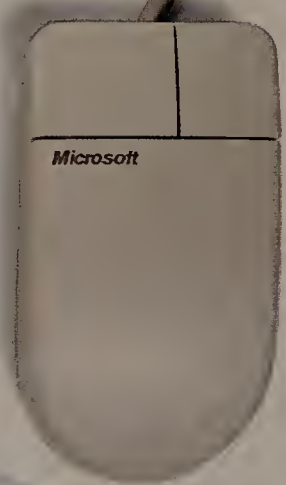
Intel is cutting its CPU prices aggressively this year—motivated largely by competition from rival chip makers like Advanced Micro Devices, which has grabbed one-fifth of 386-compatibles sales. This "CPU war" is one of the factors chipping away at system street prices.

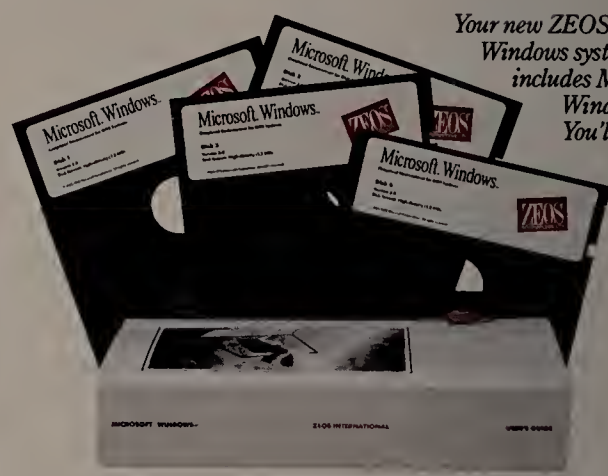
[1] Bargains of the Month are determined by adjusting prices on PCs of a given class for standard memory and storage, then finding which PC compares best.
[2] Second-quarter prediction.

Source: Instat

When you buy a new Windows system package from ZEOS you really get a bundle.

Fly through applications on your new ZEOS Windows system with your genuine Microsoft Mouse.





Your new ZEOS Windows system includes Microsoft Windows. You'll love it!

For a limited time only, ZEOS Windows systems buyers will also receive Lotus 1-2-3 for Windows plus Ami Pro 2.0, the Lotus Word Processing package for Windows. Complete and fully documented!

Wrap your Windows system up with the latest and greatest DOS version, Microsoft DOS 5.0! Fully featured and fully documented. You're going to love it!

ZEOS.

There's no reason to buy anything else.

800-423-5891

This offer is good for a limited time only. A ZEOS Windows system is any new ZEOS computer system packaged with Windows, 2MB DRAM or more and a mouse. Lotus, 1-2-3 and Ami Pro are trademarks of Lotus Development Corporation, Microsoft and Windows of Microsoft Corporation. All prices and specifications are subject to change without notice, call for current information. ZEOS is a publicly traded company NASDAQ/NMS Symbol: ZEOS © ZEOS International, Ltd., 530 5th Avenue NW, St. Paul, MN 55112

Circle 313 on reader service card

The *New* ZEOS
The Hottest Deal is

Notebook 386+! now even Hotter!

STARTING AT ONLY $1795!

From *PC Magazine's* Editors' Choice to *Computer Shopper* readers' Best Buy of 1991... The original ZEOS Notebook was perhaps the most awarded notebook in the world. So how could we make the best even better?

SMALLER. LIGHTER. MORE VALUE!

We've made our new ZEOS Notebook 386+ slimmer, trimmer, packed in some great new features and kept the great price—only $1795. Check it out!

We know portability is important to you. So we've cut a couple inches off the sides and a half pound off the weight. At a convenient 8½x 11" and a slimmer 6.6 pounds *(including the battery)* it fits right into your briefcase!

More Memory, lots of power. Your new Notebook starts with a '386SX-20MHz CPU and offers 2, 4 or 8MB of RAM. Plenty of power and plenty of room for all the memory you need.

Versatile. Use it as a Notebook—or set it up as a desktop! In addition to the standard parallel, serial and VGA ports, we've added ports for an external full-size keyboard *and* for a mouse.

Longer battery life. In addition to programmable power-saving features, we've added "Suspend and Resume," so you can put your computer "in suspense" if you pause while working. Now you can extend your battery life—which is typically over 2.5 hours—to last even longer!

Incredibly durable. In a recent "torture test" by *PC Computing,* the ZEOS Notebook was dropped, bumped, spilled on, and subject to extreme heat and cold. It survived unscathed. And your new 386+ has the same toughness built in from the ground up!

Faster and easier than ever to upgrade. More Memory and a math coprocessor are easy to add. The new 386+ design allows you to install these options any time you're ready!

MORE OF THE GOOD STUFF, TOO.

Even though your new Notebook is smaller than ever, it still offers the same, crisp 10" VGA display. The ultimate in sparkling clarity, it features advanced fluorescent backlighting for vivid VGA graphics.

And you'll still get our whisper-quiet high speed, high-capacity hard disk drive—and a built-in, industry standard 1.44 MB, 3.5 inch floppy drive. There are more advanced features, too.

For instance, the battery system of your new Notebook is the most advanced on the market. You can quick-charge or trickle-charge any time your system is plugged in. And you're sure to appreciate our snap-in, snap-out battery packs. They're so light and easy to use, you can easily take one with you when you travel. *Hour upon hour of Notebook computer power!*

SAME GREAT ZEOS 24-HOUR-A-DAY SUPPORT.

And remember, your new Notebook is backed by the best Technical and Sales support in the industry, *24 hours a day, 365 days a year.* Any time you need us, your telephone is a toll-free hotline—direct to ZEOS. You also get our 30-Day Absolute Satisfaction Money-Back Guarantee and One Full Year Limited Warranty.

ORDER YOUR OWN 386+ RIGHT NOW!

The new ZEOS Notebook 386+ is just what you've been looking for. Smaller. Lighter. More power and memory. All at an astounding price! You're going to be very satisfied. *We guarantee it!*

ORDER NOW TOLL FREE:

800-423-5891

Purchase orders from Fortune 1000 companies, governments and institutions subject to approval. Leasing programs are available. All prices and specifications are subject to change without notice. Please call to confirm pricing, specifications and warranty details. The following are trademarks of their respective companies: ZEOS (ZEOS International, Ltd.), © 1992, ZEOS International, Ltd., 530 5th Avenue, N.W., St. Paul, MN 55112 USA. ZEOS is a publicly traded company (NASDAQ symbol: ZEOS).

THE NEW ZEOS NOTEBOOK 386+. ALL THIS STARTING AT ONLY $1795!

- '386SX-20MHz CPU.
- 2MB RAM standard, expandable to 4 or 8MB!
- 20MB high speed IDE hard drive; larger available.
- Built-in high density Teac 3.5" 1.44MB floppy drive.
- High-res VGA 640x480 backlit LCD display, 32 shades of grey. Bright and clear!
- Removable quick-charge NiCad battery. 2.5 hours of battery life typical, more with power-saving features!
- One hour quick-charge or trickle-charge. Extra battery packs available.
- 79-key keyboard with embedded numeric keypad, 12 dedicated function keys, and true 101-key emulation.
- Serial, parallel, external keyboard, mouse and external video ports. Use your Notebook as a desk top too!
- Total system weighs only 6.6 pounds with battery!
- 30-Day Absolute Satisfaction Money-Back Guarantee and ZEOS Customer Satisfaction Package.
- One Full Year Limited Warranty.
- 24-Hour-A-Day Toll-Free Technical Support, 365 Days a Year.

Make your new Notebook the ultimate traveling companion. We can add more memory, a larger hard drive, custom-fitted carrying case, extra battery, internal send/receive fax modem. Ask about our money-saving packages, too!

ORDER NOW TOLL FREE

800-423-5891

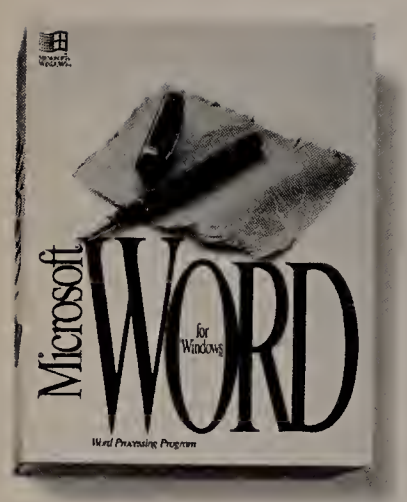
FAX Orders: 612-633-1325
Gov't. & Educ.: 800-245-2449
Outside U.S. & Canada: 612-633-6131
Hearing Impaired (TDD): 800-228-5389
MasterCard, VISA, Discover, American Express, Z-CARD, COD and Leasing Programs.
Open 24 Hours a Day, 365 Days a Year!

Circle 323 on reader service card

WordPerfect users prefer Microsoft Word for Windows.

NSTL TEST RESULTS, DECEMBER 1991

	Word for Windows	WordPerfect for Windows
Preferred to use	79%	21%
Easier to learn	71%	21%
Easier to use	83%	13%
Would purchase	79%	21%



In a recent test conducted by the National Software Testing Labs, nearly 8 out of 10 users of WordPerfect® for DOS preferred Microsoft® Word for Windows™ 2.0. They not only discovered how fast Microsoft Word lets them accomplish everyday tasks, but they also discovered that Word is an easier upgrade to learn and use than WordPerfect for Windows. To take advantage of our $129 upgrade offer,* simply call (800) 323-3577, Dept. Y90. We'll also send you the files you need to test Word yourself. If you're not satisfied, we'll refund your purchase in full.**

Microsoft®

*Offer good for current licensees of WordPerfect, MultiMate,® WordStar,® MS® Word for MS-DOS® and DisplayWrite.® Please allow 2-4 weeks for delivery upon receipt of order by Microsoft. Offer expires 6/30/92. Limit one per customer. Reseller prices may vary. Call for system requirements.** If you're not satisfied with Word for any reason, return the product to Microsoft within 90 days with proof of purchase for a full refund. Offer good only in the 50 United States. To receive only the NSTL test results: In the United States, call (800) 323-3577, Dept. Y90. For information only: In Canada, call (800) 563-9048; outside the U.S. and Canada, call (206) 936-8661. © 1992 Microsoft Corporation. All rights reserved. Printed in the USA. Microsoft, MS, and MS-DOS are registered trademarks and Windows is a trademark of Microsoft Corporation. WordPerfect is a registered trademark of WordPerfect Corp. NSTL is a trademark of the National Software Testing Laboratories, Inc.

Edited by RUSSELL GLITMAN

Compaq's SL Notebooks Clinch the Pennant

These little 386SL sluggers hit home runs with battery life that just keeps going and going and a 6-pound form that won't slow you down.

Compaq's 25-MHz LTE Lite/25 is among the thinnest, lightest, and longest-running battery-powered machines on the market. With a recharge time of less than an hour, this note is built to compute on the road.

As has become its habit of late with new technology, Compaq was not the first to announce a 386-SL–based notebook. But as you might expect, the Houston power hitter's 25-MHz LTE Lite/25 is not just another 386SL.

At 8½ by 11 inches and 6 pounds, the LTE Lite/25 (and its 20-MHz twin, the LTE Lite/20) is smaller and lighter than most notebooks. A scant 1¾ inches tall, it's also substantially thinner than most notebooks. But what brings this note home is its advertised capability to squeeze as much as 4½ hours of uninterrupted spreadsheet crunching and word processing from a single battery charge.

That's with normal power conservation features enabled; your notebook's battery life can vary widely depending on your applications, the CPU speed, and the use of power-down for backlight, hard drive, and other components. Still, most notebooks this size don't give you the choice, and 3 hours is the minimum for both Lite models.

The Lite/25 achieves this feat by taking advantage of its speed-selectable processor, design efficiencies, and Compaq's component power management, which has always been among the best. A nickel-hydride battery helps the Lite/25 deliver the same useful life with 25 percent more speed than the nickel-cadmium–equipped Lite/20. Both notes have special battery features that provide you with precise readings of your remaining power.

Quick Recharge

Both machines recharge in an hour from a Compaq Desktop expansion base or a diminutive 1-pound AC adapter—even while you're computing. Compaq also goes the SL chip one better by offering not just auto-resume but true hibernation, saving the contents of RAM to the hard drive so you can put the note to sleep and take up exactly where you left off, even in a *Windows* application months later.

The Lite/25 and Lite/20 have edge-lit VGA displays measuring 9½ inches on the diagonal that can simultaneously drive an external color VGA monitor for desktop presentations. Other extras include an on-disk, hypertext help system, a variety of hardware locks and software password capabilities, and an optional 9600-bps internal modem supporting MNP 5 and V.42bis data compression/error correction.

The Lite/25 ships with 16K of memory cache, 4MB of memory expandable to 10MB, and your choice of under-19ms 60MB, 84MB, and 120MB hard drives. The Lite/20 ships with 2MB of memory expandable to 10MB and your choice of sub-19ms 40MB, 60MB, and 84MB hard drives.

The suggested list prices for the 84MB versions of the Compaq LTE Lite/25 and Lite/20 are $3599 and $4199, respectively—matching the prices of comparable alternatives from Zenith and Toshiba.

—*Mike Hogan*

IN BRIEF

Compaq LTE Lite/25, Lite/20

These notebooks log longer battery operation than any others and are lighter and smaller than most.

Compaq Computer Corp.
P.O. Box 692000
Houston ,TX 77269
800/345-1518,
800/231-0900
Reader service no. 760

A Fleet of Font Choices Comes With Panasonic's Personal Printer

Panasonic's KX-P4430 Laser Partner combines the font-scaling power of the HP LaserJet IIIP's PCL 5 with the $1495 price of a personal laser.

Looking for scalable fonts, but don't want to shell out the bucks for a full-fledged PostScript printer? If so, the new $1495 Panasonic KX-P4430 Laser Partner is worth checking out.

Following in the footsteps of the KX-P4420 (a February 1991 Best Buy), the P4430 combines the font-scaling capabilities of the Hewlett-Packard LaserJet IIIP's PCL 5 with the low price of a personal printer.

The KX-P4430 comes with eight outline fonts, all scalable from 4 to 999.75 points in ¼-point increments. You also get 28 internal bit-mapped fonts (14 each in portrait and landscape modes).

For documents requiring more type choices, you can load fonts from the P4430's cartridge slot into memory and then insert another cartridge, giving you effective simultaneous access to two cartridges (or more, if you've got the RAM).

Panasonic also includes its new SatinPrint resolution enhancement technology, which should help smooth curves and keep lines crisp so you don't have to worry about the jaggies.

In addition to these font options, Panasonic has added a power-save function, a toner cartridge that's good for 90,000 sheets (versus 20,000 sheets on the KX-P4420), and a standard 200-sheet paper tray that can handle anything from number 9 envelopes to legal-size paper. You also get 1MB of RAM standard, instead of the 512K that came with 4430's predecessor, and a footprint that's 27 percent smaller than the 4420's.

Some of the KX-P4430's other new features, however, may not be so welcome. The 4430 is slower than the 4420—5 pages per minute versus 8—which Panasonic says is due to its space-saving engine and the processing time required by outline fonts. The new printer also has smaller standard input and output paper tray capacities.

The biggest potential problem with the KX-P4430 Laser Partner may be in software support, because drivers for the P4430 are not yet available. However, Panasonic says that drivers will soon be ready, from both Panasonic and software vendors. Meanwhile, users should be able to use HP LaserJet III drivers in both *Windows* and other popular software packages without noticing any problems.

With the promise of PCL 5 support in the future, plenty of font options in the meantime, and its low price, the P4430 looks to give HP a run for its money. At an expected $1495 list price, perhaps as little as $1100 on the street, the KX-P4430 Laser Partner is one of the least expensive scaling laser printers available, if not *the* least expensive. Anyone looking for high-quality fonts without the expense of PostScript should consider it.

—Dan Miller

IN BRIEF

Panasonic KX-P4430 Laser Partner

A personal laser printer with scalable fonts.

Panasonic Communications and Systems Co.
2 Panasonic Way
Secaucus, NJ 07094
800/742-8086,
201/348-7000
Reader service no. 761

Dell Does Upgradable Desktops for Less

The PC price wars rage on. Dell Computer's new 486P series offers a lot of bang for fewer bucks,with prices starting around $2000 for 486SX systems and less than $3000 for a 486DX-based PC.

Featuring a pizza box design (4 by 15.1 by 15.6 inches) that's compact enough to fit on almost any desktop, the new Dell line includes the 486P/20 and 486P/25 models, which use Intel's 486SX 20- and 25-MHz chips, respectively. The 486P/33 uses Intel's 33-MHz 486DX chip, which includes a built-in math coprocessor and offers overall faster performance.

Each 486P unit is upgradable. To replace your CPU, you pull out the existing CPU from the motherboard and replace it with a faster chip. Dell's unique CPU socket on the motherboard accepts both 486SX and 486DX chips, and a jumper lets you select different clock speeds—from 20 MHz to 33 MHz.

Other than having different CPUs, the three 486P systems are identical. Each comes with 2MB of RAM, an 8K cache, a 50MB hard drive, your choice of a 5¼-inch (1.2MB) or a 3½-inch (1.44MB) floppy drive, three 8/16-bit slots, and a VGA color monitor that operates at a 70-Hz refresh rate for flicker-free viewing. The 486P/20, 486P/25, and 486P/33 are priced at $1999, $2299, and $2899, respectively. Each system comes with 512K of video memory. An optional 512K video memory upgrade adds support for up to 32,768 colors in VGA resolution.

—Jeff Bertolucci

IN BRIEF

Dell 486P Series

The three Dell System 486P PCs feature upgradable CPUs and a small footprint.

Dell Computer Corp.
9505 Arboretum Blvd.
Austin, TX 78759-7299
800/289-3355,
512/338-8700 (fax)
Reader service no. 762

Unlimited connect time to access CompuServe basic services, now only $7.95 a month.

You can start with the basics at a flat monthly rate, with extended services available on a pay-as-you-go basis.

For more information about CompuServe's new basic services, just mail this card, or call 1 800 848-8199.

Name _____

Address _____

City, State, Zip _____

Telephone (_____) _____ **CompuServe®**

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

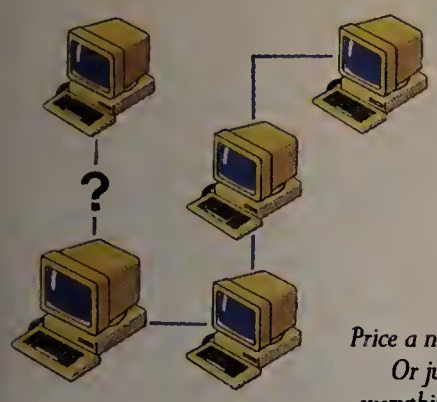
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 407 COLUMBUS, OHIO

POSTAGE WILL BE PAID BY ADDRESSEE

CompuServe®

ADVERTISING DEPARTMENT
PO BOX 20212
COLUMBUS OH 43220-9988



Find out why your PC won't talk to your LAN. And what you can do about it.

Shop. But don't drop. Need a 100% cotton pinpoint oxford shirt with button-down collar? In ecru? Try on our Electronic Mall.®

Dive deep into aquarium lore. Like whether a canister or protein filter is better for a 110-gallon salt-water tank.

Price a new Mustang. Or just learn everything about it.

Finally, a computer information service you can't outgrow. No matter how hard you try.

Learn how to monitor military satellites. (They watch us, why shouldn't we watch them?)

Find out just what the heck a zither is.

Talk to twice as many people about parallel universes.

No matter what you're into, you can get more out of CompuServe.

You can range widely over a list of services that will help you, entertain you, teach you, and challenge you. Or delve deeply into your favorite topics, learning (or even teaching) more, meeting experts, and making friends with people who share your interests.

CompuServe lets you do everything from keeping in touch with our communication services, to getting advice from online hardware and software experts. It's the one computer information service you won't outgrow.

But you will have a good time trying.

For a low one-time membership fee and $7.95 a month, you can use our most popular services as often as you like: news, sports, weather, shopping, reference materials, our electronic mail service of up to 60 messages a month, and more. Plus, there's a whole universe of other, extended options available at nominal additional charges. Your first month on CompuServe will be free, and we'll give you a $25 usage credit to explore our extended services.

To buy a CompuServe Membership Kit, see your computer dealer. For more information, or to order direct, call 800 848-8199 (614 457-0802 for international inquiries).

CompuServe®

The information service you won't outgrow.

Circle 33 on reader service card

Oversize Documents No Problem for High-Speed Network Laser

Sure, laser printers keep getting cheaper. But you'll still have to pay $10,000 or more for a high-speed, network-quality laser that offers 11-by-17-inch (ledger-size) printing, PostScript output, and multiple resolution settings.

At least until now. Dataproducts' new LZR 1560 laser printers have driven down the price of top-notch laser printing. With prices that range from approximately $5700 to $7000, the LZR 1560 line of lasers features ledger-size printing, a speedy 15-page-per-minute print engine, PostScript Level 2, and your choice of either 300- or 400-dpi resolution.

Certainly not every office requires a printer that can produce ledger-size output, but if you print large spreadsheets, charts, newsletters, posters, or engineering or architectural drawings, you will appreciate the additional page space.

You'll need a lot of horsepower to print those oversize documents, so the LZR 1560 printer comes with a fast 15-ppm Fuji Xerox engine, a Weitek RISC processor, and 4MB of RAM (expandable up to 16MB).

The LZR line includes single-, double-, and triple-tray models. The trays come in letter, legal, and ledger sizes, and each of them holds 250 sheets of paper.

In addition to Hewlett-Packard's PCL 4, the LZR 1560 line of printers features PostScript Level 2.

This latest version of Adobe Systems' page description language supports additional colors, patterns, and forms. PostScript Level 2 also gives you data compression, improved memory management, and a variety of other features. The package comes with 35 PostScript fonts.

Dataproducts sets a new price level for top-notch printing with its LZR 1560, which churns out 11-by-17-inch output at 15 pages per minute.

Need a network printer? The LZR 1560 comes with parallel, serial, AppleTalk, and SCSI ports for multiple PC connections. To ease network printing, the printer has built-in port polling, which automatically senses the active port so you don't have to flip printer switches manually.

You can choose between 300- and 400-dpi resolution via the printer's control panel. The LZR 1560 costs $5695 with one paper tray, $6495 with two trays, and $6995 with three trays.

Dataproducts LZR 1560 printers make high-speed, large-output laser printing available and affordable for a wider variety of fast-paced business users.

—Jeff Bertolucci

IN BRIEF

Dataproducts LZR 1560

A new line of laser printers with 11-by-17-inch printing, PostScript Level 2, and 300- or 400-dpi resolution.

Dataproducts Corp.
6219 De Soto Ave.
P.O. Box 746
Woodland Hills, CA 91367
800/334-3174,
818/887-8000,
818/887-4789 (fax)
Reader service no. 763

A Speedy Way to Take Your Data and Go

While removable hard drives have always been an excellent way to protect sensitive files, they've never been as fast as deskbound hard drives when it comes to reading and writing data. No more, says Quantum Corporation. The hard disk maker's new Passport XL removable hard drives offer deskbound disk speed, top-notch reliability, and up to 240MB of storage capacity.

The Passport XL drives perform very fast data transfers with an average access time of 17 ms, according to Quantum. This speed boost is the result of a proprietary caching scheme that uses 256K of high-speed RAM in the 120MB and 240MB drives, and 64K of high-speed RAM in the 50MB and 105MB models. The drives use a standard SCSI interface in order to connect with AT-compatible, Micro Channel, and Macintosh systems.

To ensure reliability, the Passport XL drives are enclosed in airtight cases that contain both the heads and the media. This construction means that your valuable data isn't exposed to dust or other particles that can lead to head crashes and data loss.

Prices for the 50MB, 105MB, 120MB, and 240MB Passport XL hard drives are $449, $629, $899, and $1099, respectively. The SCSI adapter costs $219 for AT compatibles and $329 for Micro Channel systems. You'll also have to choose between an internal ($359) or external ($469) chassis.

To make it easier to add storage capacity when you need it, the Passport XL drives are interchangeable. You can start with the 50MB drive and switch to a higher-capacity unit later if your data storage needs grow.

—Jeff Bertolucci

IN BRIEF

Passport XL

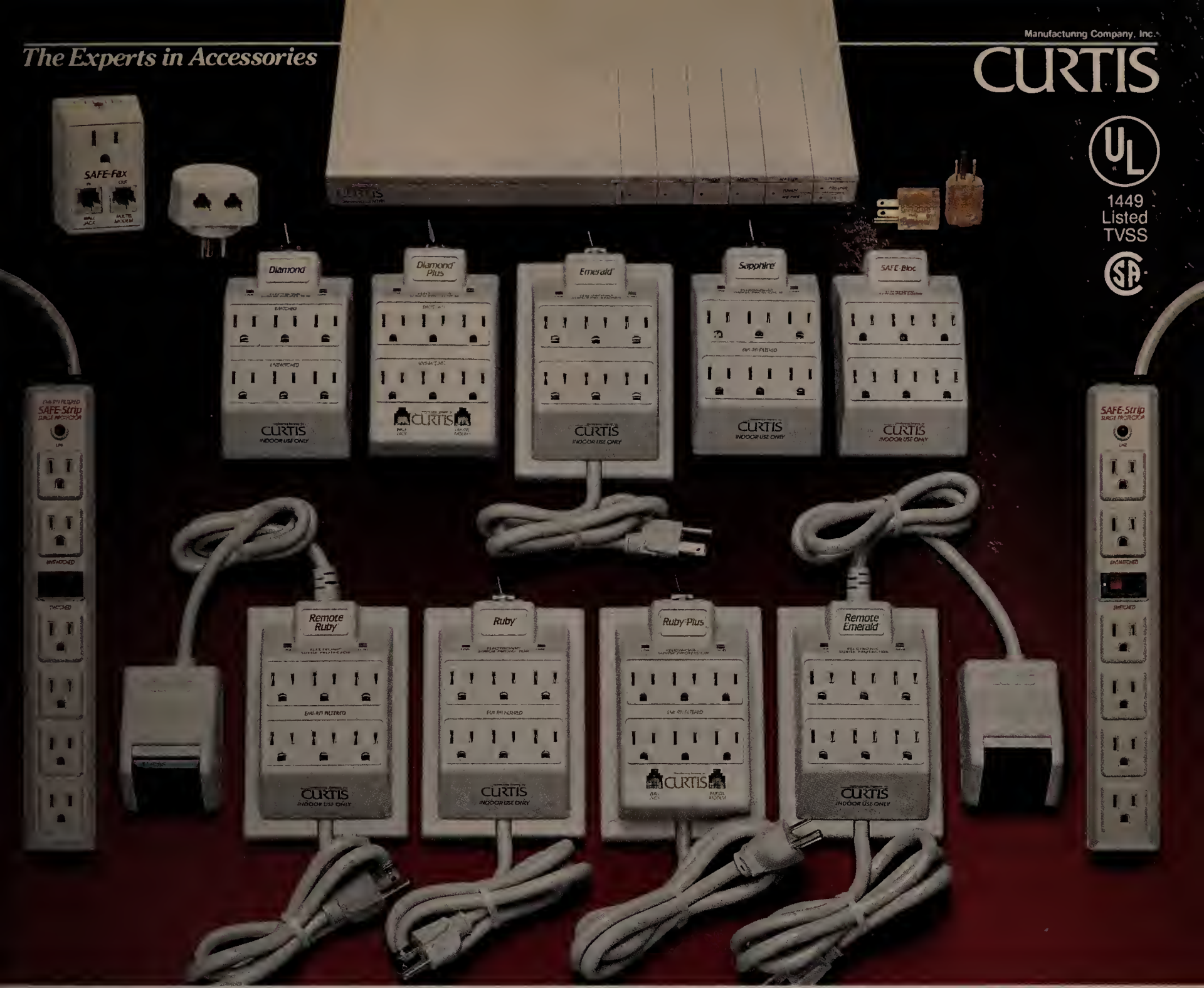
A line of removable hard drives with access times that rival fixed drives.

Quantum Corp.
500 McCarthy Blvd.
Milpitas, CA 95035
800/624-5545
Reader service no. 764

The Experts in Accessories

Manufacturing Company, Inc.
CURTIS

UL 1449 Listed TVSS



You Can't Buy A Better Surge Protector Than Curtis

Guaranteed Protection—Proven Performance

When it comes to protecting their valuable data and electronic equipment, more computer users rely on Curtis surge suppressors than any other brand. Here's why:

UL 1449 TVSS Lowest Voltage Ratings—Every Curtis surge protector has achieved a rating of 400 volts peak or less—the lowest ratings available—in tests by Underwriters Laboratories for maximum let-through voltage.

Greater Selection—Single or multiple outlets, switched or unswitched, remote control, EMI-RFI filtering, phone line surge protection—choose the surge protector with the combination that best suits your needs.

Guaranteed Protection*—Every Curtis surge protector is guaranteed to provide you with the protection you need. And most are backed by the industry's best warranty coverage—the Curtis Lifetime Warranty.

With all this going for them, no wonder Curtis surge protectors are owned by more computer users than any other brand.

Curtis. You can't buy a better surge protector.

UL Standard 1449 TVSS tests the maximum voltage that can pass through a surge supressor after clamping has occurred.

LOWEST VOLTAGE RATING													HIGHEST VOLTAGE RATING
330	400	500	600	800	1000	1200	1500	2000	2500	3000	4000	5000	6000

All Curtis Surge Protectors are rated at 330 or 400 Volts Peak the lowest ratings available.

Curtis products are available worldwide.
For your FREE "Surge and the new UL 1449 Standard" brochure, call (800) 548-4900 Ext. 40.

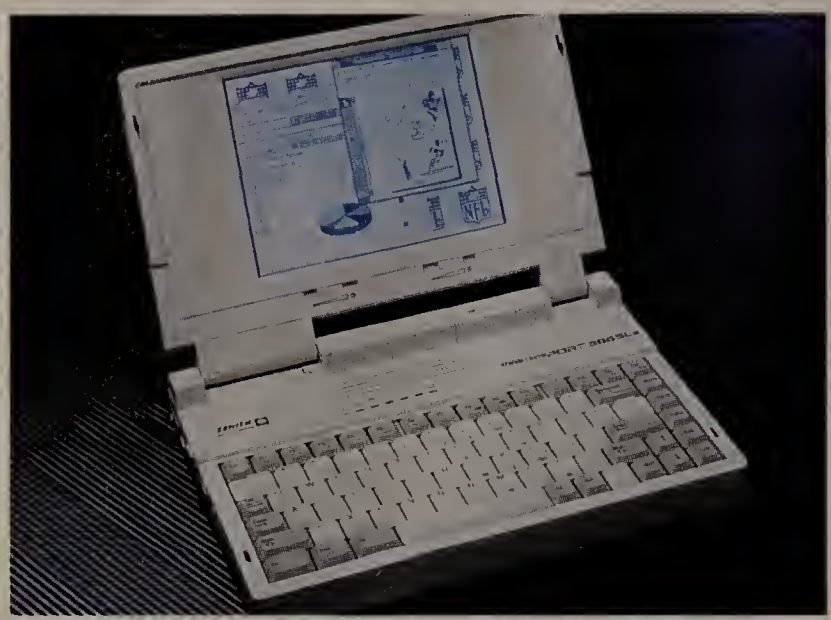
Manufacturing Company, Inc.
CURTIS

30 Fitzgerald Drive, Jaffrey, NH 03452-1931

*Surge protectors are not lightning arrestors and cannot be guaranteed to protect against direct hits.

© Curtis Manufacturing Company, Inc.

A Power-Saving Notebook With Horsepower and Stamina



Zenith has optimized its 386SL notebook with a number of power-saving options that provide from 3 to 8 hours of mobile computing.

Combining Intel's 25-MHz, low-power 386SL with a high-speed parallel port and a hard drive that protects your data if you accidentally power down, Zenith Data Systems' MastersPort 386SLe is set to do battle in the hotly contested notebook PC market.

Like Zenith's MastersPort 386SL, which uses the 20-MHz version of the SL, the 25-MHz 386SLe features a 64K RAM cache to speed operations between the CPU and the data you use most often.

As you'd expect from an SL notebook, the MastersPort 386SLe incorporates a number of helpful power-management features. For instance, the *rest* button sets the 386SLe at 0 MHz while keeping your application (and your data) in memory for about two weeks. The 386SLe also automatically rests when its battery power is nearly drained.

A standby mode—helpful for business travelers who use their notebooks intermittently during the day—reduces power consumption by roughly 75 percent and lets you resume work simply by hitting a key or moving the mouse. Zenith claims a battery life of 3 to 8 hours.

The internal 85MB hard drive designed by Zenith and Conner Peripherals protects your data if you accidentally power down. If you hit the rest button while the hard drive is reading or writing data, the drive will stop immediately and continue its read/write function when you resume operations.

For faster LAN connections and speedy printing, the MastersPort 386SLe features a high-speed enhanced parallel port (EPP). This improved interface can boost by up to four times the transmission to network adapters and other parallel port peripherals such as printers, scanners, and even UPC bar-code readers, according to Zenith.

However, since peripherals will need special drivers to take advantage of the EPP, it may be a while before you'll get your money's worth from this new parallel port.

Zenith had the future clearly in mind when it placed the 386SLe BIOS in flash memory. This setup allows you to upgrade your BIOS easily—adding, for example, support for power management features that will be built into future DOS and *Windows* applications—by downloading BIOS updates from Zenith's ZLink COM1 bulletin board or from CompuServe.

Other features of the $4999 MastersPort 386SLe include 2MB of RAM (expandable up to 8MB), a backlit black-and-white SuperTwist LCD screen, VGA resolution, and an 82-key keyboard.

The system weighs in at 7 pounds with battery. An optional internal fax-modem will cost you $499.

—Jeff Bertolucci

IN BRIEF

MastersPort 386SLe

The notebook from Zenith Data Systems includes a 25-MHz Intel 386SL and a host of power-saving features.

Zenith Data Systems
2150 E. Lake Cook Rd.
Buffalo Grove, IL 60089
800/553-0331
Reader service no. 765

NEC's Colorful UltraLite Has a Screen to Die for but Weighs In With a Heavy Price

NEC's new UltraLite SL/25C may set the performance standard in the raciest segment of the PC market—lightweight color notebooks.

The 7.5-pound unit sports a superb 9½-inch TFT (thin film transistor) active-matrix color LCD display and a speedy 25-MHz 386SL processor with 64K of cache memory. Together they make the NEC as quick as any SX-based notebook or desktop machine.

The $5999 UltraLite SL/25C comes with 2MB of RAM expandable to 10MB, an 80MB hard disk, and a full complement of I/O ports, including an enhanced parallel port and a super-VGA CRT port that supports simultaneous video output in conjunction with the LCD. The UltraLite's nickel-cadmium battery lasts from 1.5 to 5 hours, depending on usage and the settings of its four power-saving operating modes. Changing the battery is a snap, and a 5-minute "bridge" battery lets the user switch to a fresh battery without shutting down (an extra battery is $149).

The NEC displays crisp, clear, vibrant colors that are a match for those from most standard CRTs. Its new backlighting system replaces the typical one or two fluorescent tubes behind the screen with nine very thin tubes that distribute light more evenly and dramatically increase the screen's operating life, according to NEC officials.

The UltraLite SL/25C's crisp color display and impressive performance exact a premium in both price and weight. But you get unrivaled performance that is truly at the leading edge of computing. *—Rob Garretson*

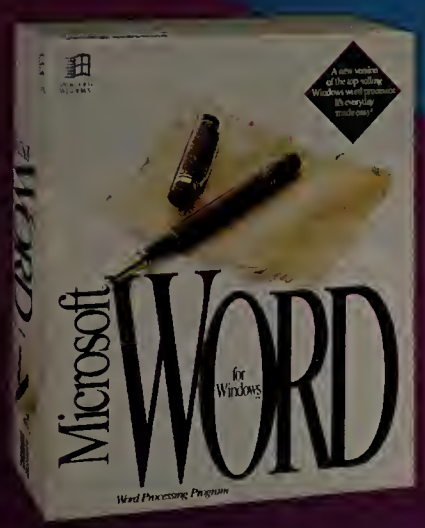
IN BRIEF

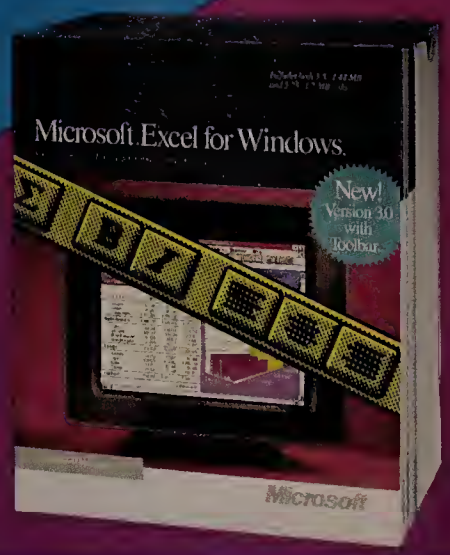
NEC UltraLite SL/25C

One of the first and most powerful color notebooks to reach the market, the UltraLite SL/25C boasts unparalleled screen clarity.

NEC Technologies, Inc.
1414 Massachusetts Ave.
Boxborough, MA 01719
800/632-4636,
800/366-0476 (fax)
Reader service no. 844

THE BIG ★★★ 3





WORDS — **GRAPHICS** — **NUMBERS**

For the fast-paced business world of the 90's, you need to use the best possible tools in every aspect of communication. A combination of three key applications will drive your message home: words to tell the story, graphics to create impact, numbers to fill in the details. Windows gives you the freedom to work easily with the best in each category and use an all-star team. CorelDRAW, with over 40 international 1st place awards, is the logical choice to add graphics to your words and numbers. It's the most versatile, powerful and the easiest to use. And today, the impact of graphics is a must to get your message across.

CorelDRAW — the graphics choice!

MOST VERSATILE — Dress up any document. Watch your project go from the ordinary to the spectacular using CorelDRAW's special effects.

EASIEST TO USE — Just point and click. CorelDRAW does the rest. It's fast and it's fun! No wonder it's the world's #1 seller.

BEST TYPE CONTROL — Over 150 fully scalable outline fonts can be altered in any way. Kern visually, extrude, envelope, apply perspective, or curve text. Nobody else comes close!

BEST CLIPART — Choose from over 4,000 images and symbols. Use it 'as is' or as elements in your own designs. "Publish" readers voted it "Best Clipart"!

Available for Windows, OS/2, Unix and CD-ROM!

COREL
1-800-836-DRAW
FAX: (613) 728-9176
CDN TEL: (613) 728-8200

Circle 48 on reader service card

...and SAVE over $6900!!!
on your business accounting software.

When you buy ACT-Plus, you get all the features you need to do full-scale business accounting. With other similarly-priced packages, you get a basic accounting program, but you don't get the power, flexibility, or functionality of ACT-Plus. So, if you want to do full-scale business accounting with them, you have to spend more for expensive add-on features.

Look at the comparison below. We took the information from the summer issue of Peachtree Times. Peachtree informs its customers of add-ons available for their software from third-party developers. Most of their add-ons are standard features in ACT-Plus. We added up the cost of the add-ons that are free in ACT-Plus. As you can see, you would have to pay over $6900 to make Peachtree do what ACT-Plus does!

Standard ACT-Plus Features FREE! No additional charge.	Peachtree Add-on Cost.
GL Reports & Features	$1338.90
Check Rec. Standard Features	405.00
AR Reports & Features	1234.00
Order Entry/Invoicing Features	2512.85
Purchase Order/Inventory Features	298.00
Payroll Reports & Features	1142.90
Total for Peachtree Add-ons	**$6931.65**

You Save Over $6900!!!

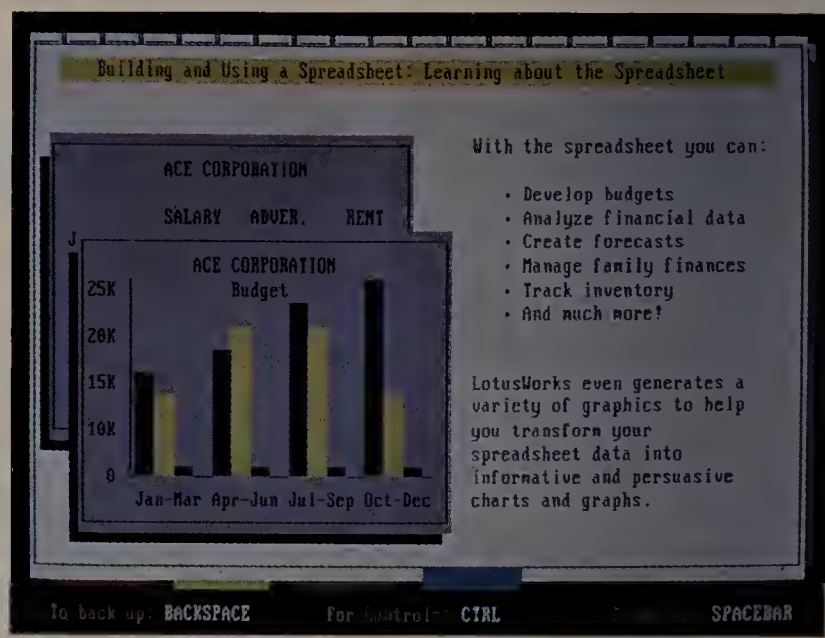
POINT OF SALE, FUND ACCOUNTING, and JOB COST are also available. Single user products are instantly and easily upgradeable to reliable LAN or UNIX/Xenix versions backed by ten years of field-proven experience.

still only **$199.50** Plus $12.50 S & H.

Cougar Mountain Software
2609 Kootenai, Box 6886
Boise, Idaho 83605
800-388-3038

Circle 56 on reader service card

Lotus Works Out With a Better Look



LotusWorks 3.0 features extensive tutorial sessions and help modules designed to get beginning and occasional users up and running fast.

If you want the best and latest integrated software program, *LotusWorks 3.0*, a major upgrade of Lotus's integrated software package, offers an impressive set of new features, among them a redesigned interface, an improved word processor, and extended help and tutorial sessions. All this, and *LotusWorks 3.0* still works within 640K of RAM—essential for laptop and beginning users who don't have multiple megabytes of memory.

When you load *LotusWorks 3.0*, you're greeted by an uncluttered, graphical "executive screen" that lets you choose among word processing, spreadsheet, data base, and communications modules. You can select other functions from this menu as well, including help, a detailed tutorial, or setup options.

But you'll need to load a *LotusWorks 3.0* application to truly appreciate the program's redesigned interface. Influenced by the look of *Windows 3.0*, *LotusWorks 3.0* features a variety of graphical enhancements including scroll buttons, resizable windows, pulldown menus, and dialog boxes. New mouse support makes using this environment a snap.

Not only does *LotusWorks 3.0*'s improved appearance make it easier to use, behind that pretty interface are some rugged new features. The word processor, for instance, now lets you embed graphics in documents and includes a new preview mode that lets you view your full-page documents before printing them.

Need to download scalable Bitstream fonts to your dot matrix or laser printer? *LotusWorks 3.0* allows you to choose between the standard 4-font set or the extended 32-font set, which you must load when you install it.

Priced at $149, *LotusWorks 3.0* may be exactly what a lot of laptop and beginning users are looking for.

—*Jeff Bertolucci*

IN BRIEF

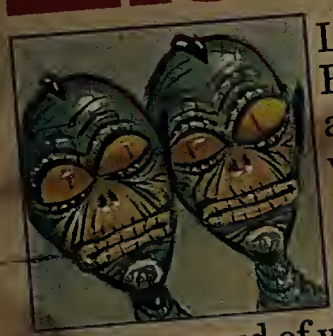
LotusWorks 3.0

This major upgrade of Lotus's all-in-one package features an improved interface and more.

Lotus Development Corp.
55 Cambridge Pkwy.
Cambridge, MA 02142
800/343-5414
Reader service no. 766

Fiction

SPACE ALIENS MARRY IN LAS VEGAS



LAS VEGAS, NEV. – Recently discovered aliens from planet X were married Jan. 7, 1992. The bride and groom both wore green. The aliens drew a large crowd of well wishers for the festive occasion. The newlywed[illegible] honeymoon in H[illegible]

Fact

HAYES OPTIMA PANICS COMPETITION

by Gary Lancaster

The incredible quality and low cost of the OPTIMA line of modems deserves a five-star rating. With superior design and loaded with features, the OPTIMA series b[illegible] the competition ru[illegible]

OPTIMA 24 for under $200

OPTIMA 96 for under $400

Superior Design and Materials. Hayes Legendary Quality and Reliability. Including Hayes Improved Escape Sequence with Guard Time and the Hayes Standard AT Command Set so there is no question about compatibility. Have it all with OPTIMA™ modems from Hayes at highly competitive prices.

Loaded with Error Control and Data Compression from V.42bis down to MNP5. With Automatic Speed and Feature Negotiation so you never have to worry about changing settings. Plus Digital Signal Processing to get the most out of your telephone line. Includes free Smartcom EZ® software that helps you get communicating right out of the box. Separate fact from fiction and you'll find Hayes OPTIMA to be more modem for your money. Call 404-263-0525 for dealer referrals, product literature or technical advice from one of our applications consultants.

Hayes

Why settle for anything less? Hayes products have the computer world talking. More than ever.

Go On-line with Hayes BBS; call 1-800-874-2937 or 404-446-6336

*Based on advertised reseller prices; exact prices vary depending on value added services provided by reseller. Hayes does not publish recommended prices for the OPTIMA family.

©1992 Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348

Circle 105 on reader service card

How Can Northgate® Offer You A Powerful, Upgradable 486SX™ System For Only $2449?

Like The Great Sphinx, Some Phenomena May Never Be Explained.

If new technology is always the most expensive, how is it possible that Northgate brings you our latest upgradable Elegance™ ZXP™ 486SX and DX computers at such a phenomenally low cost?

Our new ZIF (Zero Insertion Force) socket lets you quickly upgrade to faster, more powerful processors – even the clock doubler chips now under development. A new chip and a flip of the lever is all it takes. Features include:

- 486SX/16MHz processor
- 4MB of RAM; expands to 32MB
- 100MB IDE hard drive
- 64K cache
- 1.2MB 5.25″ and 1.44MB 3.5″ floppy drives
- Space-saving 5-bay desktop case; 7-bay Vertical Power case optional
- 14″ SVGA color monitor
- Northgate 101-S keyboard
- MS-DOS® 5.0, Microsoft® Windows™ 3.0 and Mouse
- DiagSoft™ QA Plus™ software
- FCC Class B Certified

You also get 24-hour, 7-day a week toll-free technical support, a limited one year parts and labor warranty with on-site service from NCR® (second and third year plans available) and overnight shipment of replacement parts at our expense. Order today and remember – our 30-day money back guarantee means you have

©Copyright Northgate Computer Systems, Inc. 1992. All rights reserved. Northgate, Elegance, ZXP, and the Northgate 'N' logo are U.S. trademarks or registered U.S. trademarks of Northgate Computer Systems. 80486SX and 80486 are U.S. trademarks of Intel. MS-DOS, Windows and Microsoft are U.S. trademarks or registered U.S. trademarks of Microsoft Corporation. All other products and brand names are U.S. trademarks and registered U.S. trademarks of their respective companies. Prices shown are in U.S. dollars and do not include shipping/handling charges or appropriate sales taxes. Offer valid in U.S. and Canada only. Prices and specifications subject to change without notice. Northgate reserves the right to substitute components of equal or greater quality or

Gazing out over the shifting sands of Giza, Egypt is the Great Sphinx – one of the world's most baffling mysteries. How were the ancients able to carve its massive features over 40 centuries ago? How come the Sphinx shows extensive signs of erosion – not by wind and sand but by water? Who made the Sphinx – ancient Egyptians or a still-earlier civilization? Why was it created? And when? Although scholars continue to look for answers, the centuries-old mystery of the Great Sphinx may never be fully solved.

intel inside™

nothing to lose. And a phenomenal computing solution to gain.

Elegance ZXP 486SX/16 $2449
*Lease as low as $85.57/mo.**

Other systems as configured above

Elegance ZXP 486SX/20 $2499
*Lease as low as $86.47/mo.**

Elegance ZXP 486SX/25 $2799
*Lease as low as $96.85/mo.**

Elegance ZXP 486DX/33 $2899
*Lease as low as $100.31/mo.**

Add $150 for Vertical Power case.

Call for a free Decision-Maker's Kit, complete pricing and custom configuration information.

800-345-0188

Major corporations, volume purchasers and government agencies call National Business Accounts: 800-345-0031

Charge it to your VISA, MasterCard, Discover, American Express or Northgate Big 'N' card.

NORTHGATE COMPUTER SYSTEMS, INC.

7075 Flying Cloud Drive, Eden Prairie, MN 55344

CODE N3404

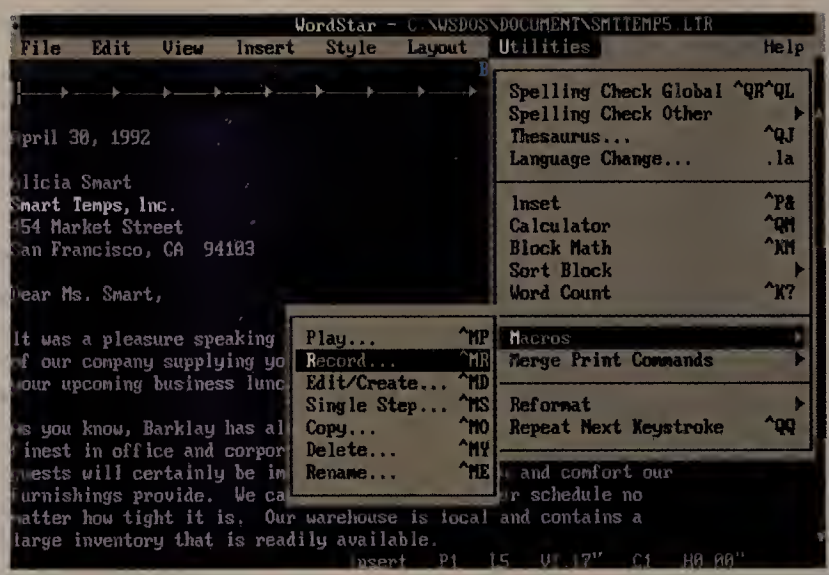
performance All items subject to availability We support the ethical use of software To report software copyright violations, call the Software Publishers Association's Anti-Piracy Hotline at 1-800-388-PIR8 *Monthly lease payments are based on a 36-month standard, fair market value open-ended lease 12-60 month leasing options available for qualified businesses

A Kinder, Gentler WordStar Shows a Windows-Like Interface

WordStar for DOS bridges the gap between the *Windows* version of the product and good old *WordStar 6.0*, with a new interface, extensive mouse support, and a new macro language.

The most striking thing about the new *WordStar* is its *Windows*-like interface, which makes the program a lot easier to use for those who haven't memorized *WordStar*'s complex keyboard commands.

All the program's features are available through pulldown menus, and there are lots of *Windows*-like features such as scroll, style, and title bars and status and rule lines. In the redesigned dialog boxes, you can click on check boxes and radio buttons to activate features. In addition, you can choose many commands simply by pressing their first letter, and shortcut key combinations abound.



WordStar for DOS includes graphical menus that let you navigate through the program quickly without paying a performance penalty.

In most DOS programs you pay a performance penalty for working in a graphical mode. Not with *WordStar*. According to company officials it's just as speedy as a character-based program, and if getting used to the new interface seems too much like breaking in a pair of shoes, the classic *WordStar* interface is just a click away.

Another important new feature is a long-overdue macro language. The product ships with 40 prerecorded macros for selecting a style, starting a spelling check, or saving a file; and you can record, edit, and play back your own macros with a single keystroke.

WordStar for DOS now lets you create fax files or import 27 different kinds of graphics files. Priced at $495 (or $89 to upgrade from previous versions), this granddaddy of word processors shows it can still learn a few new tricks.

—*Bronwyn Fryer*

IN BRIEF

WordStar for DOS

WordStar now features a new name, a Windows-like interface, a new macro language, and support for graphics files.

WordStar Int'l, Inc.
201 Alameda del Prado
Novato, CA 94948
800/227-5609,
415/382-8000
Reader service no. 767

Virus Protection Against the Unknown

Does it make you uneasy to think that any worker in your office—even a temp—can bring in a virus-infected disk and wipe out a critical PC, workstation, or your entire LAN? It should. Viruses are multiplying, with new infections cropping up all the time. And even though the proliferation of infected disks gives LAN administrators nightmares, most still take an ostrichlike approach to prevention. Savvy users, on the other hand, are weighing in with an ounce of antivirus prevention from programs such as Fifth Generation Systems' new *Untouchable* and XTree's recently updated *ViruSafe 4.5*.

These programs promise to protect LANs or individual PCs from known *and* unknown viruses by launching a two-pronged defense against infection. Memory-resident (TSR) monitors check system RAM for known boot-sector and partition-table viruses, and virus scanner/removers search out and eradicate any that may have contaminated your undefended systems. *ViruSafe*'s resident scanner can even block viruses from entering RAM. You don't have to spare much memory: *Untouchable*'s RAM-resident module takes just 5K of conventional memory, while *ViruSafe*'s uses 9K to 12K. And you can load either TSR high with DOS 5.0 and give up almost no conventional RAM.

As an ultimate line of defense, both programs use an installation scheme that registers file signatures to protect against unauthorized changes by unknown viruses. *Untouchable* even makes a data base of *all* your file signatures. But with either program, you should keep a floppy safely stashed until a change is detected. With this kind of preparation, it's easy to reconstruct infected files. *Untouchable* also lets you set up a report structure that leaves a clear audit trail of any alerts and infections. Fifth Generation and XTree offer periodic updates of known viruses, but both claim that their programs will protect against unknown viruses by detecting alterations to executable files.

A stand-alone version of *Untouchable* is available for $165; a LAN starter kit with a supervisor package and a 10-node license is $695. *ViruSafe 4.5* lists for $99 with upgrades available for $39.95. A LAN version with a 10-node license is $595. These are not the only effective antivirus programs on the market—you have plenty of other choices. But if you're not already considering virus protection for your PCs, it's time. Burying your head in the sand won't do the job. —*Rex Farrance*

IN BRIEF

Untouchable, ViruSafe 4.5

The new breed of antivirus software gives your whole office protection against even unknown viruses.

Fifth Generation Systems
10049 N. Reiger Rd.
Baton Rouge, LA 70809
800/873-4384,
504/295-3268 (fax)
Reader service no. 768

XTree Co.
4330 Santa Fe Rd.
San Luis Obispo, CA 93401
800/395-8733,
805/541-0604
Reader service no. 769

Breaking the page barrier.

The new TI microLaser Turbo™ printers. High-performance graphics at record speed.

Give yourself a breakthrough. The TI microLaser Turbos race through popular graphics software like Ventura Publisher® and Harvard Graphics faster than other printers.

How?

The Turbos' RISC-based 8220 controller with PostScript® software from Adobe® processes information from the PC faster. So you spend less time waiting for graphic output.

Now give yourself all this speed and PostScript Level 2 with 35 scalable fonts. Superior paper handling that includes a 250-sheet paper drawer that slides *inside* the printer. Automatic switching between HP LaserJet®/PostScript modes and PC/Mac® interfaces†. And two of the smallest footprints you'll find.

Plus, you can break the page barrier without breaking your budget. Designed for personal printing, the 9ppm microLaser Turbo starts at $2,249*. Ideal for shared printing, the 16ppm XL Turbo goes for $3,649*.

Quick. Dial the number below for the name of your nearest TI dealer. And break some speed records of your own.

1-800-527-3500

POSTSCRIPT

TEXAS INSTRUMENTS

71842

*Suggested retail price. †Requires optional AppleTalk® interface. microLaser Turbo is a trademark of Texas Instruments Incorporated. Ventura Publisher is a registered trademark of Ventura Software, Inc. Adobe, PostScript and the PostScript logo are registered trademarks of Adobe Systems Incorporated. HP LaserJet is a registered trademark of Hewlett-Packard. Mac and AppleTalk are registered trademarks of Apple Computer, Inc.

©1991 TI

Circle 296 on reader service card

Graphical Computing With DOS

SuperGUI includes an icon editor that lets you create custom icons for this graphical DOS shell and assign icons to popular DOS applications.

It's hard to escape the graphical world of computing today—even if you are a dyed-in-the-C>-prompt DOS user. If you're just getting started, a graphical view of the files and applications on your hard disk can make computing far easier and more fun.

To help novice users ride the wave to graphical computing, Media Management has introduced *SuperGUI,* a simple, graphical DOS shell that provides a quick and convenient way to launch applications and perform basic file management chores such as copy and move.

In fact, *SuperGUI* may be all you need if you or your users are mouse proficient, run mostly DOS programs, and have limited file management needs. It provides an attractive, graphical interface similar to GeoDOS, from which you can load programs by clicking on multicolored icons. *SuperGUI* comes with more than 150 icons and in addition allows you to create your own.

The icons are assigned during installation, when *SuperGUI* searches for programs it recognizes and automatically matches them with appropriate icons. However, you will have to assign icons manually to a number of popular programs including *ProComm Plus, Norton Utilities, PageMaker,* and *PC Paintbrush.* Fortunately, this task is an easy one.

You can use *SuperGUI*'s file manager to copy or move a file or group of files and perform other common file management chores. Unlike the shell in DOS 5.0 or *PC Tools,* however, it won't let you view more than one subdirectory and its files at once or view files according to their extension or date. Nor will you find any multitasking or task switching capabilities.

SuperGUI does include some extras, such as a phone dialer, a time-tracking feature to log how much time you spend in any given application, a macro recorder to automate tasks such as tape backup and disk optimization, and a simple file editor. The editor won't, however, wrap around long lines.

The program's on-line help is context sensitive and hypertext based, making it easy to use, but it lacks both an index and a table of contents.

Unlike character-based DOS shells such as *Menu Direct Gold, SuperGUI* doesn't have a calendar or calculator, and it can't improve on DOS's file naming limitations.

The program lists for $129.95 and requires DOS 3.1 or a later version, a graphics adapter, and a minimum 512K of RAM.

SuperGUI is a colorful application launcher and a way for DOS users to ease into the world of graphical computing without having to trade up to 386 hardware.

—Reid Goldsborough

IN BRIEF

SuperGUI 1.4

An easy-to-use graphical DOS shell that makes innovative use of icons.

Media Management Systems, Inc.
One Meca Way
Norcross, GA 30093
404/564-5606,
404/564-5610 (fax)
Reader service no. 771

Cut-Rate and Personal, Take Three

Microrim started the trend early last year when it shipped *Personal R:base,* a stripped-down, low-cost version of its full-powered relational data manager and a *PC World* Best Buy in July 1991. Borland followed last fall with *Paradox SE,* offering many of *Paradox*'s capabilities for a dirt-cheap price. Now DataEase International is joining the trend with *DataEase Personal,* an inexpensive data manager based on its more-powerful *DataEase 4.5.*

DataEase Personal has plenty for the novice user who wants a powerful data manager but isn't sure how to use one. Its step-by-step, prompted guides help you set up your data base and explain everything you need to know every time you have to make a decision. On the other hand, if you know your way around a data base, you can write an application in *DataEase*'s programming language. (This ability is unique—Microrim's and Borland's low-cost alternatives aren't programmable.) If you want to run an application right out of the box, *DataEase Personal* comes with address and check-writing applications already set up.

So what's missing? First off, there's no spreadsheetlike table view, which means you can't look at several records on one screen. Furthermore, you can't create a relational form in *DataEase Personal* as seamlessly as you can in *DataEase,* and you can't incorporate one form into another or create a lookup field to see from one table to another. Since this version doesn't support extended or expanded memory, large applications may hit their heads on the 640K ceiling. As befits a "personal" program, there's no multiuser support and there's support for only 65,000 fields.

The program lists for $99 and requires 512K of RAM and DOS 2.1 or later.

—Lincoln Spector

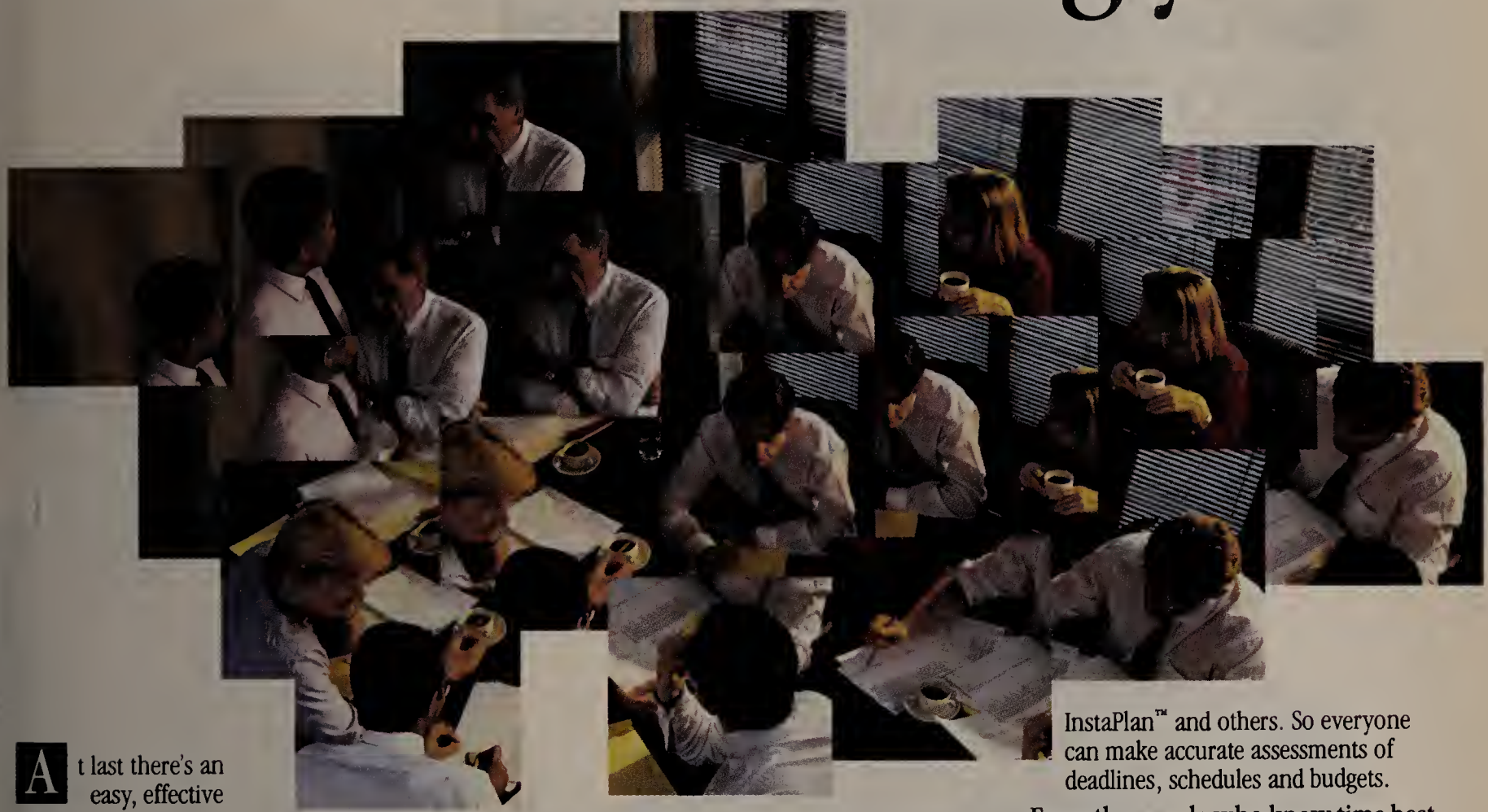
IN BRIEF

DataEase Personal

Another low-cost version of a full-fledged data manager that also offers some programming capabilities.

DataEase Int'l Inc.
7 Cambridge Dr.
Trumbull, CT 06611
800/243-5123,
203/365-2317 (fax)
Reader service no. 770

Who's doing what, and what's it costing you?



At last there's an easy, effective software tool for tracking and analyzing the cost implications of how time is spent on projects, clients and activities: New TimeSheet Professional 2.0.

Time records that come to you, not the other way around.

Gathering time and expense data used to take hours of running around, harassing people for timesheets and costs. Not anymore.

Available in single user and network versions, TimeSheet Professional lets users and workgroups enter tasks and hours onto convenient week-at-a-glance timesheets. And record details and expenses effortlessly with pop-up windows. When entering records is this hassle-free, it stops being a chore and becomes a habit.

An instant snapshot of your status.

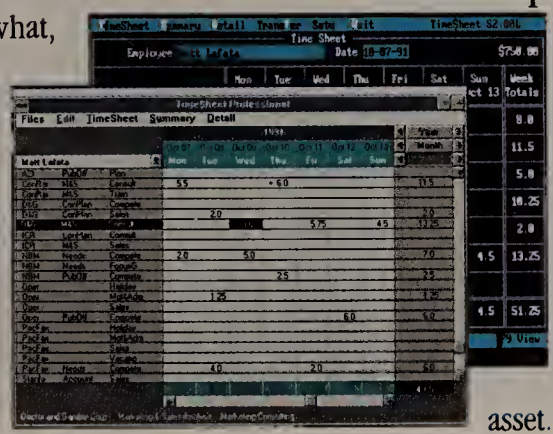
Once the data's in, TimeSheet Professional consolidates the time and expense information into illuminating reports and summaries.

See who's doing what, how long it's taking them, and just what every minute is costing you. Analyze the status of any job or client.

Customize reports just the way you want:

- Report by budget vs. actual and/or by percentage of completion
- See and create time and resource budgets
- Compare hours and expenses on a weekly, monthly or yearly basis
- View charges to date, with unreported time highlighted

Using the optional D/X™ Data Exchange Utility,* you can seamlessly transfer your time data to project managers like Symantec's™ On Target™ and Time Line,® Computer Associates'® SuperProject,® Microsoft's® Project for Windows,™ ABT's Project Workbench,® Micro Planning International's InstaPlan™ and others. So everyone can make accurate assessments of deadlines, schedules and budgets.



Both Windows and DOS versions feature week-at-a-glance timesheets for convenient time recording.

From the people who know time best.

TimeSheet Professional comes to you from TIMESLIPS Corporation, the world leader in time tracking and billing software. The single user version is only $199.95 for either DOS or Windows.® The 8-user Network Edition is just $699.95. See your dealer today, or call TIMESLIPS Corporation.

Time is your most valuable asset. Get a better line on how it affects your bottom line. Get TimeSheet Professional.

Special Limited Time Offer:

We're so sure TimeSheet Professional will revolutionize how you see time, we'll send you a FREE working model. Don't delay—call today.

TimeSheet PROFESSIONAL®

Make every minute count.

TIMESLIPS CORPORATION

© 1992 TIMESLIPS Corporation, 239 Western Avenue, Essex, MA 01929 USA
SYSTEM REQUIREMENTS: IBM® PC, XT,™ AT,® PS/2,® or compatible. Hard disk required. 420K RAM. DOS 2.1 or higher (Network Edition requires DOS 3.1 or higher) or Windows 3.0. TimeSheet Professional is a registered trademark of TIMESLIPS Corporation.™ and ® represent trademarks or registered trademarks of their respective owners. *Sold separately.

Call 800-285-0999
Fax 508-768-7660

Circle 289 on reader service card

How Can Northgate® Put A Loaded 486™/33 EISA System To Work For You For Only $4699?

Like The Easter Island Statues, Some Phenomena May Never Be Explained.

Visitors to Easter Island are awestruck by the statues that greet them. This same sense of awe is experienced by people who see how much performance Elegance™ 486/33 EISA gives them for such a low price.

Elegance 486/33 EISA lets you quickly tackle scientific analysis, software development, 3D CAD/CAM/CAE, complex financial modeling plus database and network management. This unsurpassed power results from Northgate's phenomenal engineering that features:

- 80486/33 MHz processor
- 8MB of rapid 32-bit DRAM
- 128K SRAM cache
- 200 MB IDE hard drive
- 1.2MB 5.25" and 1.44MB 3.5" floppy drives
- Eight 32-bit EISA bus slots (six bus master, two slave)
- Vertical Power Case with room for eight external half-height devices
- 14" SVGA 1024 x 768 color monitor with high-speed video card
- Exclusive, award-winning *OmniKey*® keyboard
- MS-DOS® 3.3, 4.01 or 5.0
- Microsoft® Windows™ 3.0
- Microsoft Mouse
- DiagSoft™ QA Plus™ system diagnostic/performance software

©Copyright Northgate Computer Systems, Inc 1992 All rights reserved Northgate, Elegance, OmniKey and the Northgate 'N' logo are U.S trademarks or registered U.S. trademarks of Northgate Computer Systems 80486 is a registered U.S. trademark of Intel. Microsoft, MS-DOS and Windows are trademarks of Microsoft Corp. All other products and brand names are U.S. trademarks and registered U.S. trademarks of their respective companies. Specifications subject to change without notice Northgate reserves the right to substitute components of equal or greater quality or performance. All items subject to availability Offer good only in the U.S and Canada Prices are in U.S dollars and do not include shipping and handling or appropriate sales taxes

Along the shores of Easter Island, isolated in the Pacific, a row of statues reveals the past of an ancient civilization shrouded in mystery. Some historians speculate that these figures were symbols of worship. Others believe they represent ancestors long deceased. Who they were and how the ancient craftsmen moved them to their positions without heavy machinery, are long-kept secrets that history books have failed to unlock.

intel inside™

You can also count on toll-free telephone technical support 24 hours a day, 7 days a week; a limited one-year parts/labor warranty with overnight shipment of replacement parts at our expense; and on-site hardware service from NCR® (second and third year plans available), plus a 30 day money-back guarantee.

For a truly phenomenal computing experience, order today.

Elegance 486e/33 MHz $4699

*Lease as low as $160.71/mo.**

Call for a free Decision-Maker's Kit, complete pricing and custom configuration information.

800-345-0188

Major corporations, volume purchasers and government agencies call National Business Accounts: 800-345-0031

Charge it to your VISA, MasterCard, Discover, American Express or Northgate Big 'N' card.

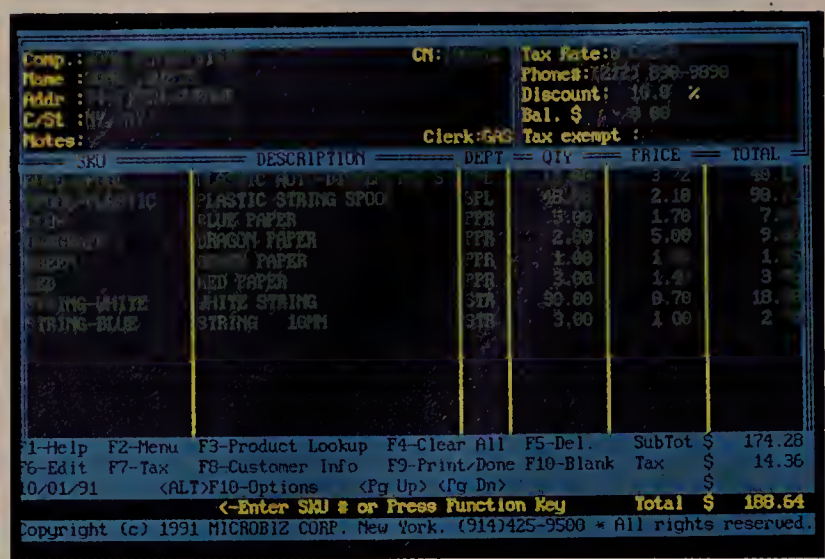
NORTHGATE COMPUTER SYSTEMS, INC.

7075 Flying Cloud Drive, Eden Prairie, MN 55344

CODE N3504

We support the ethical use of software. To report software copyright violations, call the Software Publishers Association's Anti-Piracy Hotline at 1-800-388-PIR8. *Monthly lease payments are based on a 36-month standard, fair market value open-ended lease. 12-60 month leasing options available for qualified businesses.

Accounting Software That Also Analyzes Customer Data



Great American's One-Write Plus Accounting Works bundles the firm's accounting package with new analytical tools for small businesses.

Following the lead of DacEasy and Peachtree, which have become famous in the small-business accounting market for packing comprehensive accounting functionality into one low-priced bundle, Great American Software has introduced *One-Write Plus Accounting Works*, a bundle of its popular accounting package and several recently developed add-ons.

Priced at $299, *Accounting Works* brings together *One-Write Plus*—including general ledger, accounts receivable, invoicing, accounts payable, and SuperTrack inventory features—with the company's payroll package.

Taken together, the add-ons give small businesses the basic tools they need to analyze the volumes of customer data locked up in their accounting package. That should improve inventory and order management as well as customer relations. Armed with *Accounting Works*, a small business has some of the analytical resources associated with large corporations.

Specifically, *Accounting Works* gives you *Get Paid Plus*, a collection of letters for customer and vendor mailings (for such areas as marketing and collections); *@Accounting*, the firm's link to *1-2-3* for streamlined analysis of accounting data; *Data Save*, a backup utility; and *PC Menu*.

One-Write Plus Accounting Works requires 640K of RAM, a hard disk–equipped PC, and DOS 3.1 or later.

Also new from Great American Software is *One-Write Retail Express*, a bundle of the general ledger and check-writing features in *One-Write Plus*, together with *Retail Controller Junior*—point-of-sale software developed by MicroBiz Corporation. Targeted at small retail and service businesses, *Retail Express* manages a variety of check-out functions, including processing of credit card authorizations, printing itemized receipts and invoices. It can also figure the appropriate sales taxes and provide inventory tracking.

Retail Express requires 640K of RAM, 4MB of hard disk space, and DOS 3.3 or later. It sells for a suggested retail price of $199.95.

—*Roberta Furger*

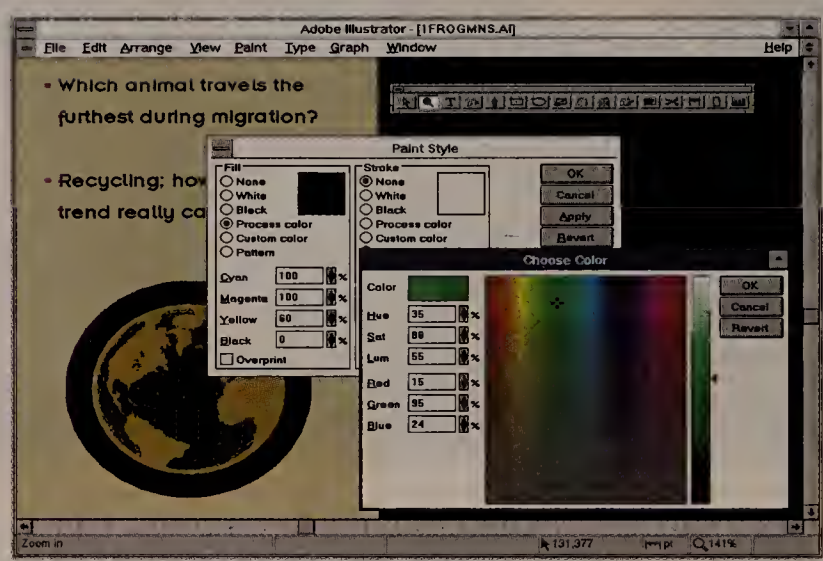
IN BRIEF

One-Write Plus Accounting Works, One-Write Retail Express

A new accounting bundle and a point-of-sale package deliver integrated accounting functions to small businesses.

Great American Software, Inc.
615 Amherst St.
Nashua, NH 03063
800/388-8000,
603/881-9337 (fax)
Reader service no. 773

Second Time's the Charm for Illustrator



Illustrator's new color-pick menu lets you select colors on screen, while the resizable floating toolbox enables you to customize your work space.

Three years ago, Adobe introduced *Illustrator*, a Macintosh mainstay, to the DOS world. The result was a commercial failure. This time Adobe's taking no chances. *Adobe Illustrator 4.0 for Windows*, targeted at professional graphical designers, has all the features of the best-selling Mac version plus a host of extras—most notably on-screen editing of color illustrations in preview mode.

As you'd expect from an Adobe product, text handling is a strong suit. You can enter WYSIWYG text directly on screen—in any of 40 bundled Type 1 scalable typefaces—and combining that text with graphics effects is easy. The $695 price includes *Adobe Type Manager* and the type-manipulation program *Adobe TypeAlign*.

A full complement of drawing tools—including a graph-making tool and a powerful blend device—are accessible from a customizable toolbox. *Illustrator*, which boasts 16- and 24-bit color support (up to 16.7 million colors), also does color separation, courtesy of *Adobe Separator*. In keeping with Adobe's cross-platform philosophy, *Illustrator* accepts files from the Mac or NeXT machines. —*Steve Fox*

IN BRIEF

Adobe Illustrator 4.0 for Windows

WINDOWS A top-rated Macintosh drawing package enters the Windows fray.

Adobe Systems, Inc.
1585 Charleston Rd.
Mountain View, CA 94039
415/961-4400,
415/961-3769 (fax)
Reader service no. 772

WITH CITIZEN, THE ONLY THING MORE POWERFUL THAN MY PRINTER IS MY DOCUMENT.

From spreadsheets to data sheets to high-impact documents complete with color, the Citizen GSX-140 PLUS gives you everything you need in a 24-wire printer.

Designed for just about any application, the Citizen GSX-140 PLUS is one of the fastest printers in its class. And one of the easiest to use, too. With Command-Vue™, you're in control of color, pitch, eight different fonts, page layout and more. All at the touch of a button.

Color is just that simple, too. Add impact and memorability to any document with the color software you already own. Simply snap in the optional Color On Command™ kit.

The GSX-140 PLUS actually remembers the software programs you use most often. All you do is push a button and the Citizen will prepare any one of four page layouts automatically. It handles paper effortlessly, too, with continuous paper tear-off that instantly advances the next page to the tear-off bar. And thanks to paper parking, you can easily switch between continuous paper and single sheets.

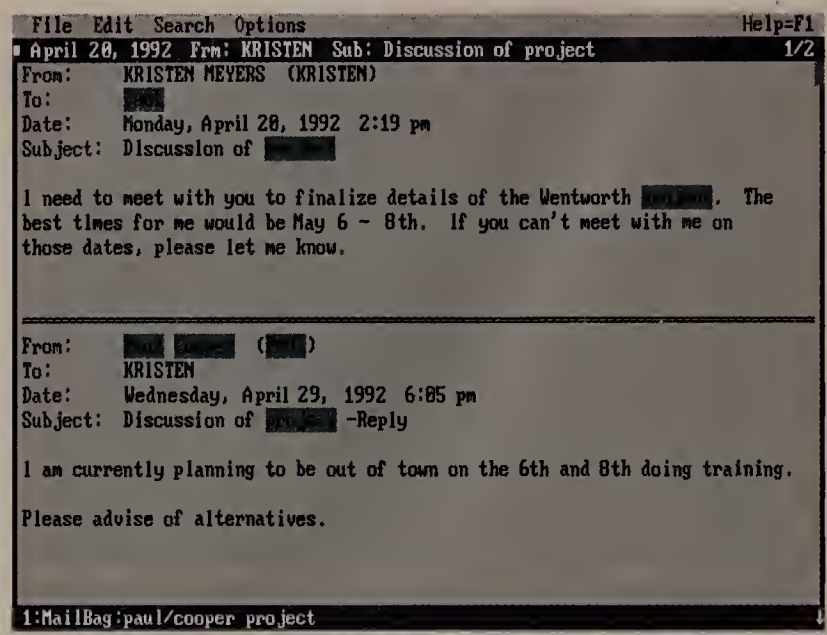
At Citizen, our goal is to build the best printer for the best value. That's why we include the Citizen Pledge of Quality – a two-year warranty. The Citizen GSX-140 PLUS. It puts power at your fingertips. For more information call 1-800-556-1234 ext. 34.

©1991 Citizen America Corporation
Citizen, Color On Command, Command-Vue and the Citizen logo are trademarks of the Citizen Watch Co. Ltd.

CITIZEN™

Circle 91 on reader service card

Search and Track E-Mail With MailBag



The E-mail utility MailBag organizes and archives your in-box and keeps track of message strings so you'll always know the context of your mail.

Has this ever happened to you? You've got 200, maybe 300 messages cluttering your E-mail in-box. Not very organized, are you? Suddenly you have to find an important message—maybe a business proposal—sent to you months ago by, uh, let's see now . . . who sent that message?

Even if your E-mail package lets you organize messages in folders, it's not easy to store, catalog, or retrieve them on demand. To the rescue comes *Mail-Bag*, an E-mail storage-and-retrieval utility designed for NetWare.

Created by Folio Corporation, the developer of NetWare's Help utility, *MailBag* helps you archive your E-mail messages so you can quickly find the right message at the right time.

MailBag archives mail from most of the well-known LAN-based E-mail products, including *Da Vinci eMail*, Lotus's *cc:Mail*, *Microsoft Mail*, and *WordPerfect Office*, according to Folio. You can also send messages to *Mail-Bag* from within your E-mail program. It works with any version of Novell Netware except for NetWare Lite, Novell's peer-to-peer offering, and should be installed by your LAN administrator on the network server.

To save a particular E-mail message in your own personal *MailBag* "infobase" file, you just highlight the message and press a pair of keys. You can also save text attachments to messages—useful for network users who exchange a lot of document files.

MailBag automatically indexes every word and number in your messages, making it possible for you to do fast full-text searches. You can also categorize E-mail by author, date sent, date archived to your infobase, and topic.

To access your infobase, you must first exit your E-mail program and then run *Mail-Bag* from the DOS prompt. From there you use the program's simple, menu-driven interface to search for words or messages.

To help save hard disk space, *MailBag* uses a proprietary compression algorithm to reduce the size of your infobase—up to a 50 percent reduction for infobases over 1MB, Folio says.

MailBag costs $295 for 25 users. For the thousands of Novell NetWare users who find themselves lost among the bits and bytes of electronic mail, this handy utility can make computerized communications a bit more civilized.

—*Jeff Bertolucci*

IN BRIEF

MailBag

A storage-and-retrieval utility for Novell NetWare helps organize your E-mail.

Folio Corp.
2155 N. Freedom Blvd.
#150
Provo, UT 84604
800/543-6546,
801/375-3700
Reader service no. 774

Convert Paper Forms to Digital

PerForm Tracer automatically converts the scanned image of a paper form into an electronic format usable by the *PerForm* family of form design packages. This *Windows* program uses object recognition technology to identify and convert graphic elements such as lines, boxes, and tables into objects that you can move and resize via an easy-to-use graphical interface. It converts images scanned in TIFF, PCX, or PNT (*MacPaint*) formats. You can import a converted image directly into the program or save it for later use. *PerForm Tracer* costs $495.

—*Jeff Bertolucci*

IN BRIEF

PerForm Tracer

Delrina Technology
6830 Via Del Oro #240
San Jose, CA 95123
800/268-6082
Reader service no. 865

COMPUTER SECURITY PRODUCTS

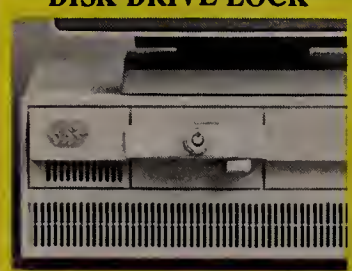
COMPLETE LINE OF PROVEN AND EASY TO INSTALL COMPUTER SECURITY PRODUCTS FOR COMPUTERS.

PREVENT COMPUTER THEFT!

***Kablit*™ Security System**

This system allows you to secure all your computer components: CPU, monitor, keyboard, printer. **Internal component security:** Kablit fasteners secure the rear panel of CPU protecting internal boards and hard drives. Fasteners available for all applications. Prices **$34.95** to **$49.95** depending on system.

DISK DRIVE LOCK™



IBM PS-2 DLK-270 Series

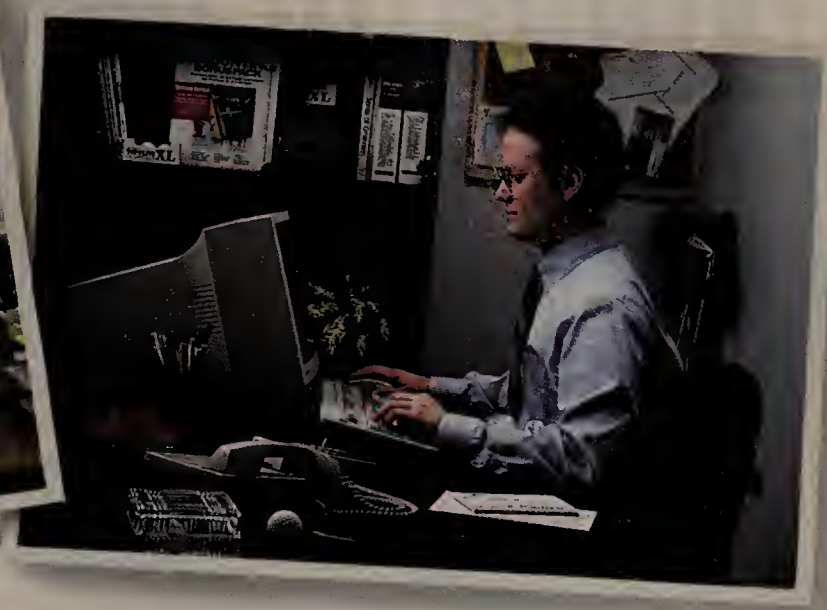
Now you can lock a diskette into your disk drive and force the computer to boot from the diskette. Disk Drive Lock models available for PS/2 - 30, 55SX, 50, 70 and 90. Protect your data from viruses or from being copied. Other drive locks to fit most non IBM PS/2 and Macintosh disk drives. List price **$24.95**

Order your free catalog of these and many other security products. Purchase orders accepted. Quantity pricing available. Shipping not included. MC/VISA accepted. Dealer inquiries invited.

Secure-It, Inc. 18 Maple Court East Longmeadow, MA 01028 **1-800-451-7592**

Circle 256 on reader service card

Take The Money And Run!



Take the Money With All NEW! DacEasy® Point of Sale™

New DacEasy Point of Sale is the perfect stand-alone point of sale system for every size business that also integrates fully with DacEasy Accounting 4.2! New Point of Sale turns any 286 or better PC into a powerful Point of Sale system and it's compatible with PC-Based point of sale hardware, too.

Anyone Can Use It!

You don't have to be a computer genius to use DacEasy Point of Sale. Install it in minutes and perform all sales activities from one screen such as scanning bar codes, tracking customers, processing layaways and credit-card transactions, accessing product prices and information, tracking inventory and more. Since it's so easy to use, you'll speed up your sales transactions which will increase sales.

Customize It to Meet Your Needs.

The DacEasy Point of Sale interface can be customized to work the way you need it to. And it prints invoices and receipts with custom headers and sales messages, giving your business the flexibility to meet growing demands.

Reports That Keep You Informed.

DacEasy Point of Sale's reports help you manage your daily transactions such as sales by product, sales person and customer, credit transactions, layaways, returns, receipts by payment method, audit tape and more!

Integrate With DacEasy Accounting 4.2!

Best of all, DacEasy Point of Sale can integrate with DacEasy Accounting to provide complete inventory management and streamline your accounting activities! Use them together and you'll find there's no better way to take the money *and* run your business.

Run Your Business Easily With DacEasy® Accounting™ 4.2

Over one million businesses have learned the advantages of using DacEasy Accounting to manage their books. Its 12 integrated modules make running your business easier than ever: General Ledger, Accounts Receivable, Accounts Payable, Cash Management, Inventory, Product Assembly, Purchase Order, Billing, Budgeting, Graphics, Forecasting, and Report Generator. Use all of the modules or just the ones you need. Either way it's your total business solution.

Friendly Accounting.

DacEasy's logical interface and complete on-line, context sensitive help make it easy to learn and use. And the simple point-and-shoot mouse environment with transaction-oriented, pull-down menus is friendly to even the most novice of users.

Powerful Accounting.

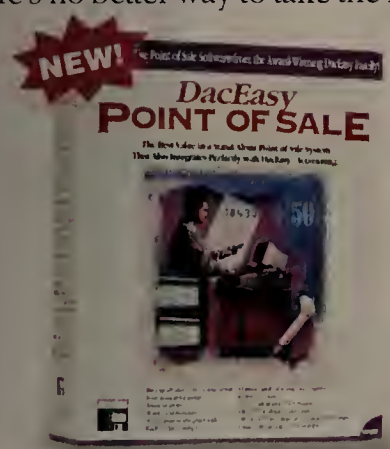
With a complete report generator and 3-D graphics capability, DacEasy Accounting has your business covered with critical information at your fingertips. And printing Invoices, Purchase Orders, Statements, Credit Memos and other forms are a keystroke away.

The Most Award-Winning Accounting.

Over the past six years, DacEasy has won more awards than all other Accounting software combined. Plus, we're proud of having the industry's largest support staff and quality DacEasy Certified Consultants nationwide, all professionally trained to provide complete support should *you* ever need it.

Unmatched Value.

Nothing matches DacEasy's combination of power, simplicity and value. Add DacEasy Point of Sale to the equation and running your business will be easier than you ever imagined.



$149.95

Network Versions Also Available

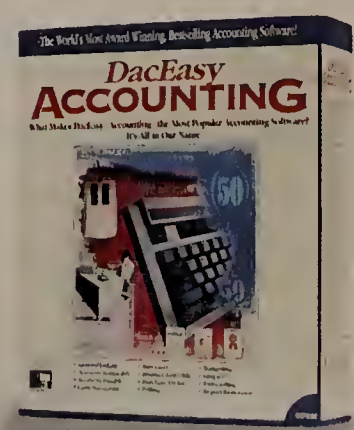
Network versions of DacEasy Accounting and Point of Sale are also available for just $299.95 each, or check out the special network offers in the single-user packages! These NetBIOS compatible systems have the same features as the single user versions but allow unlimited access with multiple PCs - just think of the possibilities!

See Your Local Dealer or Call Us and Order Today!

1-800-DAC-EASY

30-Day Money-back Guarantee when ordered directly from DacEasy.
Media Code: PCW

Requires 640K, IBM or compatibles or PC based Point of Sale System, Hard disk, DOS 3.1 or later, mouse optional. Network versions require NetBIOS compatible LAN. DacEasy, DacEasy Accounting and Point of Sale are trademarks of DacEasy, Inc. Copyright © 1992 All Rights reserved.



$149.95

Circle 94 on reader service card

See us at COMDEX/Windows World, Booth #W820, McCormick Place

Announcing A Grammar Cl
It Yanks Writing Errors Ou

Morphology. It's the linguistic science of recognizing root words. It's also the science behind our breakthrough grammar checking technology that's a quantum leap in proofreading power for PCs—the writing improvement technology we call Mor•Proof.™ Introducing Grammatik™ 5 for DOS and Windows.

MOR·PROOF

THE POWER

New Grammatik 5 uses Mor•Proof (morphological proofreading) to analyze parts of speech using root words so it's not fooled by prefixes, suffixes, and conjunctions. It identifies nouns, verbs, and other parts of speech with unprecedented accuracy. And ferrets out even the most complex grammar errors with ease.

Subtle writing errors like tense shifts and incorrect verb forms are ripped out like weeds. Comma splices and conjunctive clause errors are clipped. Before they can cause you embarrassment.

Yet for all of its error detection prowess, Grammatik 5 is still as easy to use as a spelling checker.

THE PROOF

But precision proofreading is just the beginning. Virtually everything that's made Grammatik the #1 grammar and style checker is now even better.

Of course, it still proofreads your writing for errors in grammar, style, punctuation, usage, and spelling. But now, Grammatik checks 58 comprehensive classes of writing rules, protecting you against literally hundreds of thousands of possible errors. Including errors that even proofreading professionals often miss.

Grammatik 5 includes specific error-checking patterns for ten writing styles, from advertising and business letters to proposals and fiction. It works inside all major DOS and Windows word processors including Word, WordPerfect, and Ami Pro. And, it even has an instantly accessible writing guide with "Hot-Word" writing advice linked specifically to errors you've made.

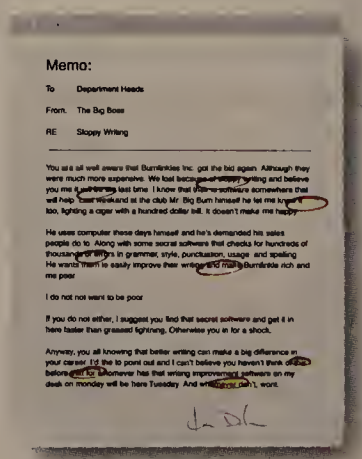
THE PAYOFF

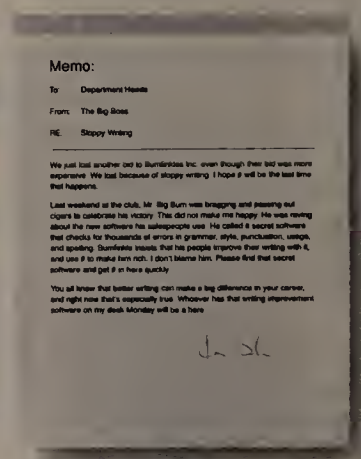
Which brings us to the payoff: Better writing.

If you use Grammatik 5, we guarantee it will improve your writing immediately, or your money back.*

At the touch of a key, your writing will communicate more clearly, it will be tighter, smarter, and always error-free. Everything you write, every letter, memo, and proposal will present you at your best.

So rip those writing errors out by the roots with Grammatik 5. You'll discover what 1.5 million users already know. Grammatik is the easiest way to improve your writing.


Memo:
To Department Heads
From: The Big Boss
RE Sloppy Writing


Memo:
To Department Heads
From: The Big Boss
RE Sloppy Writing

BEFORE AFTER

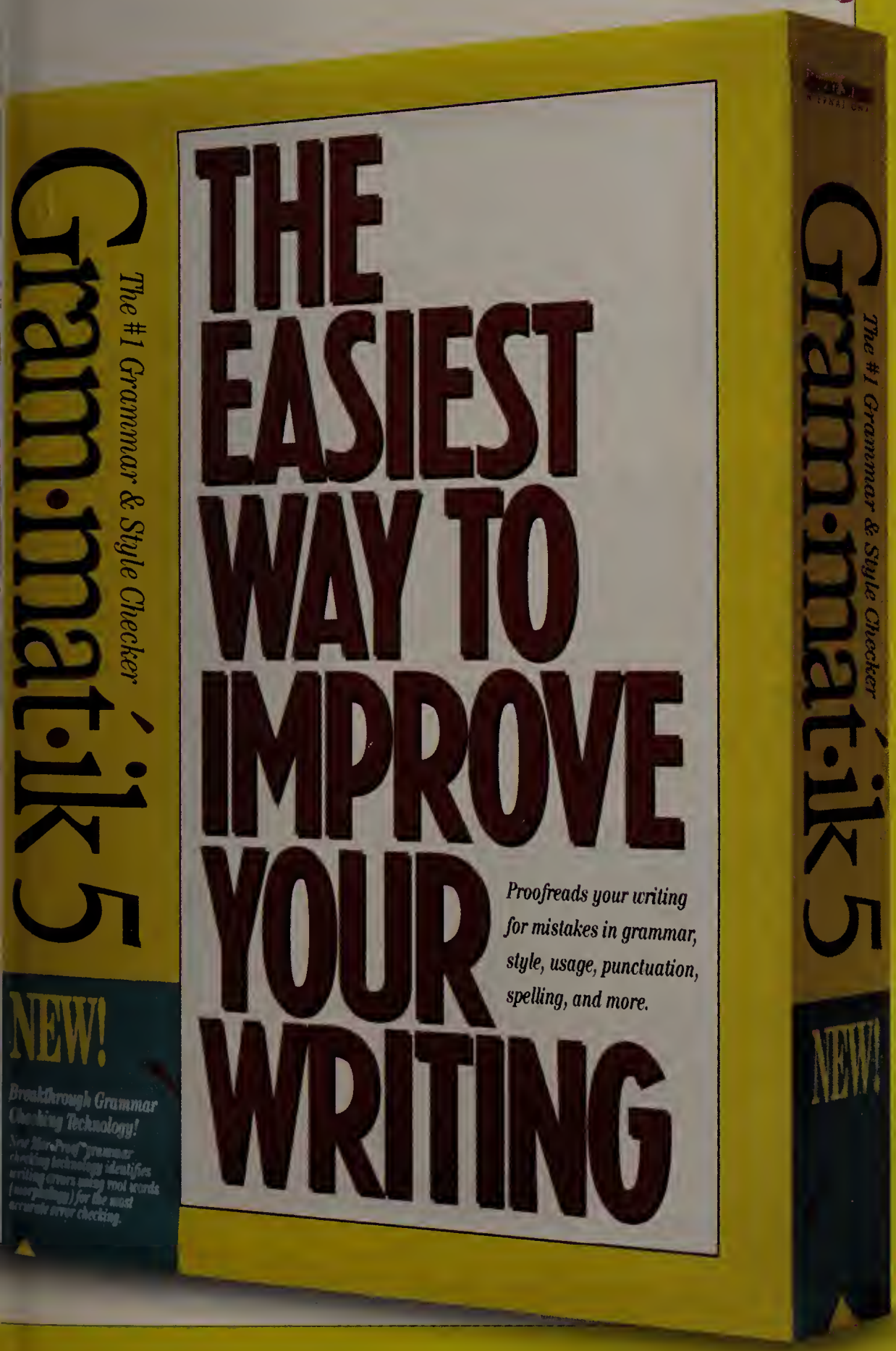
See your dealer or call **1-800-872-9933 ex. 500W** to order now for only $99 on our 60-day money-back guarantee.

Introducing Gram·mat·ik 5

*See participating dealers within North America for details. **Offer expires June 30, 1992. Limit one per customer. Offer good in 50 United States, outside US call 415-541-0222 for details. Call for system requirements. Grammatik, The Easiest Way To Improve Your Writing, and Mor•Proof are trademarks of Reference Software International. Other brand/product names are trademarks of their respective holders. © 1992 Reference Software International, Inc.

FOR DOS & WINDOWS

ecker So Powerful, By The ROOTS!



UPGRADE!

Grammatik, RightWriter, and Correct Grammar users, upgrade to the proof-reading power of Grammatik 5 with a 60-day money-back guarantee!**

INSTRUCTIONS: Please specify DOS or Windows version when upgrading. Grammatik users call 1-800-872-9933 to upgrade for $34.99 plus tax/shipping, or fax this coupon with your serial number and credit card authorization to 1-415-541-0916. RightWriter and Correct Grammar users send original manual title page or program disk and $44.99 plus tax/shipping. Send to Grammatik 5 Upgrade, Reference Software, 330 Townsend Street Suite 119, San Francisco, CA 94107. In CA add appropriate sales tax and $5.00 shipping. In US, outside CA, add $7.50 shipping.

Name_____

Company_____

Address_____

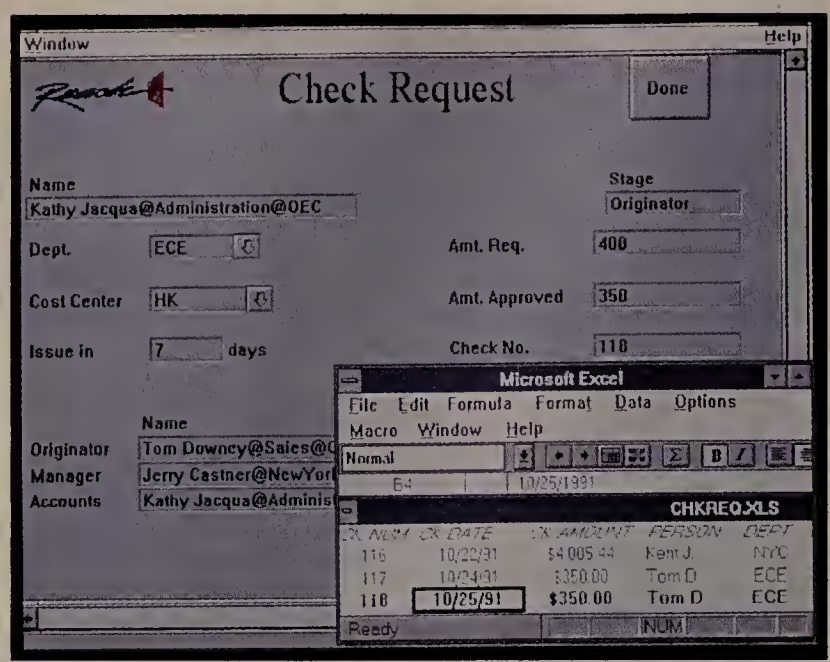
City, State, Zip_____

ex. 500W

Reference Software INTERNATIONAL

Circle 243 on reader service card

Let E-Mail Manage Your Work Flow



WorkMan lets you route electronic forms through your business and swap information with other Windows applications via DDE links.

E-mail is a great way to exchange messages and files. But Reach Software says electronic mail should also give you a better way to organize and route your daily business operations across a network.

Enter Reach Software's *WorkMan*, a *Windows* program that lets you create, send, and track "intelligent" electronic forms across a LAN. These smart forms automatically route themselves through your company, disclosing certain fields only to designated managers.

WorkMan consists of two programs: a run-time environment for deploying *WorkMan* applications, and *WorkMan Tools*, a graphical-based development program for creating *WorkMan* forms.

Starting in the *Tools* environment, you create a form by clicking on icons—one to build a dialog box, another to add "action" buttons, and so on until the basic shape is completed. You can then customize the form with text, lines, and graphics. You can also make viewing certain fields, such as those that contain sensitive financial data, dependent on who's receiving the form.

Once the form is complete, you define who receives the form and what actions they can take. Using the point-and-click interface, you establish your form's route. You can route it to departmental managers before sending it to personnel, for example. And you can alter the form's appearance depending on who's receiving it, creating different action buttons for different recipients, for example. A purchase order form you send to your boss may include "approve" and "disapprove" buttons. The same form routed to accounts payable may not include them.

You can integrate your *WorkMan* electronic forms with other *Windows* applications using DDE (Dynamic Data Exchange), which allows you to swap information with other *Windows* apps. *WorkMan* also comes with scripts for performing SQL queries to mainframe-based data.

WorkMan runs on Novell's NetWare MHS and Banyan's *VINES Mail*. A five-user license that lets you create an unlimited number of *WorkMan* applications costs $2495. Additional five-user licenses cost $1495 each. For $995 you can buy a five-user version of *WorkMan* that lets you run a single *WorkMan* application, such as purchase order tracking. The *WorkMan Tools* development kit costs $995.

—*Jeff Bertolucci*

IN BRIEF

WorkMan

WINDOWS LAN-based software and development tools let you create and exchange "intelligent" forms via E-mail.

Reach Software Corp.
330 Potrero Ave.
Sunnyvale, CA 94086
800/624-5356,
408/733-0482 (fax)
Reader service no. 775

Take Central Station to Your LAN

Artisoft's new Central Station spins a unique twist on the concept of notebook docking stations. In addition to connecting your notebook to the corporate LAN, this modem-size unit can also be a full-time printer and modem server for *Lantastic* and NetWare LANs when it is equipped with software modules from Artisoft.

At $595, Central Station costs less than docking stations. While you won't get any room for add-on cards or additional memory, one of Artisoft's $99 *StationWare* modules allows the Central Station unit to act as a NetWare or *Lantastic* print server while another provides dial-in connection to both networks.

Central Station lets notebooks access network printers and modems.

Central Station features three serial ports, one parallel port, one PC port, and an optional SCSI port. It comes with 128K of RAM, which you can expand to 512K. Another nifty feature: The front panel includes a row of LED lights that let you know which port is active.

—*Jeff Bertolucci*

IN BRIEF

Central Station

The Central Station "connectivity processor" lets you connect portable PCs to a LAN.

Artisoft, Inc.
691 E. River Rd.
Tucson, AZ 85704
800/846-9726,
602/293-8065 (fax)
Reader service no. 776

YOUR CHOICE JUST GOT EASIER.

FastData 386/33

$1699

Includes

- Intel 386DX™ 33mhz Processor
- 64K Static Ram Cache
- 4 megabytes of high speed Ram.
- 105 mb 17ms IDE hard disk, 1:1 interleave with 32K cache.
- Desktop Chass's or Mini-Tower
- 1.2mb 5.25" & 1.44mb 3.5" drives.
- Non-Interlaced 14" SVGA color monitor, 1024x768 resolution.
- 16 bit 1mb Super VGA card.
- Clock calendar, parallel port, game port and two serial ports.
- 8 expansion slots, 2 occupied.
- MS-DOS 5.0.

more ⇨

FastData 486/33

$2199

Includes

- Intel 486DX™ 33mhz Processor with 8K Internal Cache
- 128K External 25ns Cache
- 4 megabytes of high speed Ram.
- 105 mb 17ms IDE hard disk, 1:1 interleave with 32K cache.
- Tower (shown) or Desktop Chassis
- 1.2mb 5.25" & 1.44mb 3.5" drives.
- Non-Interlaced 14" Super VGA color monitor, 1024x768 resolution.
- 16 bit 1mb VGA card.
- Clock calendar, parallel port, game port and two serial ports.
- 8 expansion slots, 2 occupied.
- MS-DOS 5.0.

FastData Satisfaction

Why buy an underfeatured overpriced PC without full support when you can get your hands on a hot new FastData PC for hundreds less?

"this is a likable computer"
-PC Magazine 10/27/90

Superior Design

You get more of your FastData personal computer because we put more into it. FastMicro's been building PC's longer than most of the competition and we put that experience to work for you. We use proven designs that pass our stringent performance requirements and compatibility standards so it'll be sure to pass yours.

"the component list reads like a Who's Who in the computer world"
-Computer Shopper 6/91

Full Support

Should you have a question or a problem, call us seven days a week. Our support engineers will work with you to solve the problem over the phone. In the unlikely event your system is down, it's our goal to get your system back up - and quick. If a part has failed, we'll get a replacement part out the door via FedEx the same day (Mon-Fri). If that doesn't solve the problem, we'll dispatch GE on-site service or completely replace your computer at no charge to you.

GE Computer Service

"FastMicro has lasted while scores of other companies have come and gone"
-Computer Buyer's Guide 10/91

Risk Free

FastMicro sells to over half the Fortune 500 and Universities in 49 states. Those who buy for a living rely on us, you can too. Take more than our word on it - purchase any FastData brand product and if you are not thoroughly satisfied within thirty days, you can return it for a full refund.

"bargain hunters may find it hard to resist"
-PC World 10/91

Easy to Buy

FastMicro makes it easy to own a FastData personal computer. Call toll-free seven days to ask a question, get a price, or place an order. Talk to one of our system consultants. Ask your tough questions, we think you'll like our answers. After all, FastMicro wants you as a customer for life, not just today.

FastData 386/SX-20

$1499

Includes

- Intel 386SX™ 20mhz Processor
- 4 megabytes of high speed RAM.
- 105 mb 17ms IDE hard disk, 1:1 interleave with 32K cache.
- 1.2mb 5.25" and 1.44mb 3.5" Teac floppy drives.
- Mini-Tower (shown) or Desktop Chassis.
- 200 watt power supply.
- Non-Interlaced 14" Super VGA color monitor, 1024x768 resolution.
- 16 bit VGA card with 1mb Video Ram.
- Clock calendar, parallel port, game port and two serial ports.
- Key Tronic 101 key keyboard.
- 8 expansion slots, 2 occupied.
- MS-DOS 5.0.
- Microsoft Windows & Logitech Mouse add $69.
- FCC Class B.
- FastMicro Peace of Mind

FASTMICRO

1-800-824-6000

FastMicro, Inc. 4405 East Baseline Road. Phoenix, AZ 85044
U.S. Sales 800-824-6000 / 602-431-8200, FAX 602-431-8300

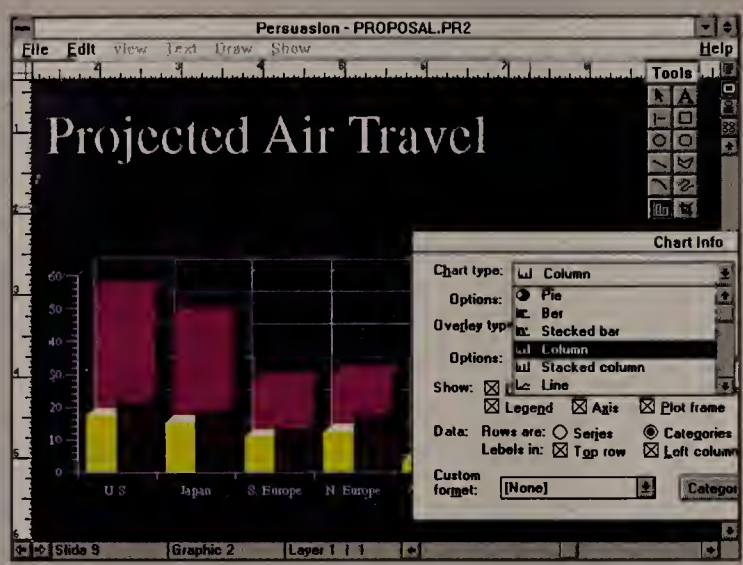
© 1992 FastMicro, Inc. Specifications & pricing subject to change without notice. Quotes refer to various FastData models.

Circle 100 on reader service card

UPDATE

New Versions of Your Favorite Products

Persuasion 2.1 for Windows



Persuasion 2.1 for Windows now displays Persuasion slides on either a PC or Macintosh. Version 2.1 supports OLE and DDE, too.

WINDOWS Aldus's presentation graphics package gets even more persuasive with version 2.1. The handiest new feature is a player that displays *Persuasion* on-screen slide shows on either a PC or Mac, regardless of which machine you used to create the presentation. Indeed, any *Persuasion* file—not just slide shows—can now be read by either platform. Version 2.1 also picks up support for OLE and DDE and adds 28 master "AutoTemplates." The price, which includes a bundled copy of *Adobe Type Manager*, holds steady at $495. An upgrade from version 2.0 is $50; an upgrade from a competitors' presentation package is $99. Aldus Corp., 411 First Ave. S, Seattle, WA 98104-2871; 206/622-5500.

Reader service no. 777

Micrografx Designer 3.1

WINDOWS This already impressive draw program beefs up its type handling by bundling *Adobe Type Manager* and *Type Align*, an Adobe font-manipulation package. Either bundled application can be launched from within *Designer*, which looks unchanged but has been slightly reengineered to take advantage of the add-ins. *Designer* is enhanced by 167 additional Type I fonts from Adobe and DTC. *Designer 3.1* retails for $695; 3.*x* upgrades are $99.95 and upgrades from earlier versions are $149.95. Micrografx, Inc., 1303 Arapaho, Richardson, TX 75081; 800/ 733-3729, 214/234-2694.

Reader service no. 778

SmarText 2.0

If you have to make your way through long documents like manuals or books, you know how easy it is to get lost. *SmarText 2.0*, an upgrade to Lotus's *SmarText* hypertext software, makes it easier to build, publish, and read long electronic documents. The product comes in two parts—*SmarText* Builder and *SmarText* Reader. The *SmarText* Builder converts word processing or text files to documents that can be searched by text strings or combinations of keywords. When the Builder converts a word processing file to an electronic document, hypertext links automatically connect words or phrases to related text and graphics, so you can navigate through very long documents to find specific information. The *SmarText* Reader lets you distribute documents created with the Builder and comes with a host of reading, searching, and annotation features. The *SmarText* Builder is priced at $495; the Reader is available for $99. Lotus Development Corp., Word Processing Division, 5600 Glenridge Dr., Atlanta, GA 30342; 800/831-9679, 404/851-0007.

Reader service no. 779

R&R Report Writer for Paradox

Concentric Data's *R&R Report Writer*, long a favorite *dBASE* accessory, is now available for *Paradox* users, offering a versatile tool for creating great-looking reports. *R&R Report Writer for Paradox* supports LaserJet and PostScript proportional fonts (including soft fonts and cartridges), allowing you to mix type styles and point sizes while keeping your lines and columns straight. And to make sure that the printed report will be to your liking, there's also a graphics page preview. *R&R Report Writer for Paradox* lists for $249, with a LAN six-pack available for $1249. Concentric Data Systems, Inc., 110 Turnpike Rd., Westborough, MA 01581; 800/325-9035, 508/366-1122.

Reader service no. 780

InCommand 1.3

Command line aficionados will appreciate the wild card and text searching enhancements in the latest update of *InCommand*, a collection of command line utilities. Now you can specify several wild card patterns in one command, and when searching through files for a text string, you can easily go back to the most recent match. *InCommand*'s wild cards are a superset of DOS's and include some powerful options. Typing **DIR *.* .TXT, .DOC,** for instance, will show a list of all files in the current subdirectory and all subdirectories under it with the extensions TXT or DOC. *InCommand* may not simulate *The Norton Utilities'* NDOS, but it offers extra options, including the capability to search for whole words only, use subdirectory wild cards, and enter dates as days of the week. Version 1.3 of *InCommand* retails for $60. Inductive Logic, P.O. Box 26238, San Diego, CA 92129; 619/578-5146.

Reader service no. 781

SQLBase 5.0

Released simultaneously for DOS, OS/2, NetWare, and SPARC (UNIX) operating systems, *SQLBase 5.0* offers enhanced compatibility across these platforms, faster performance, better support for

graphical applications, and an "easy install" option for users unfamiliar with SQL data base servers. *SQLBase 5.0* has an improved query optimizer that reduces the time needed to compile and execute complex queries. The program handles partitioned data bases that span multiple disk drives and contain megabytes of data. *SQLBase 5.0* also works with IBM's DB2 mainframe data base. The five-user version of *SQLBase 5.0* for all platforms is $995. The unlimited-user versions for DOS, OS/2, NetWare, and UNIX are $2995, $3995, $4995, and $9995, respectively. Gupta Technologies,1040 Marsh Rd., Menlo Park, CA 94025;800/876-3267, 415/321-9500.

Reader service no. 782

AVR ScanPack Bundle

Advanced Vision Research (AVR) is now bundling *ScanPack*, a set of scanning utilities, with its AVR 8000 line of 400-dpi scanners. *ScanPack* includes a menu-driven program for installing your scanner, and *EasyScan*, a *Windows 3.0* utility that lets you scan documents or images directly to disk from within any *Windows* application. The utility includes a gray-scale preview feature and an adjustable scan window. Among others, *ScanPack* supports TIFF, GIF, Targa, and PCX file formats. In addition to *ScanPack* the AVR 8000 scanner comes with Micrografx *Picture Publisher*, a *Windows 3.0* image editor for both gray-scale and color images. The AVR 8000/GSX gray-scale scanner, which is targeted at OCR users, comes with Ocron's *Perceive* OCR software, SCSI interface kit, and bundled software for $1690. The AVR 8000/CLX color scanner, SCSI kit, and software costs $2190. Advanced Vision Research, Inc., 2201 Qume Dr., San Jose, CA 95131-9809; 800/544-6243, 408/434-0968 (fax).

Reader service no. 783

MenuWorks Total Security 2.0

With *MenuWorks Total Security 2.0* you get bank-vault protection in a friendly menu shell that recognizes and organizes up to 2500 programs. This *Windows*- and network-compatible security program from PC Dynamics supports 100 security levels, passwords, log-on IDs, and user profiles. You can restrict up to 64 DOS commands—such as FORMAT and DELETE—and prevent anti-security end runs by locking the keyboard during boot up and making protected drives invisible to the end user. Do you have top secret data? Protect it with the Data Encryption Standard (DES) encoding used by many government agencies. *MenuWorks Total Security* also provides virus checking and lets you maintain a detailed log of system activity. *MenuWorks Total Security* lists for $149.95. PC Dynamics, Inc., 31332 Via Colinas #102, Westlake Village, CA 91362; 800/888-1741, 818/889-1741.

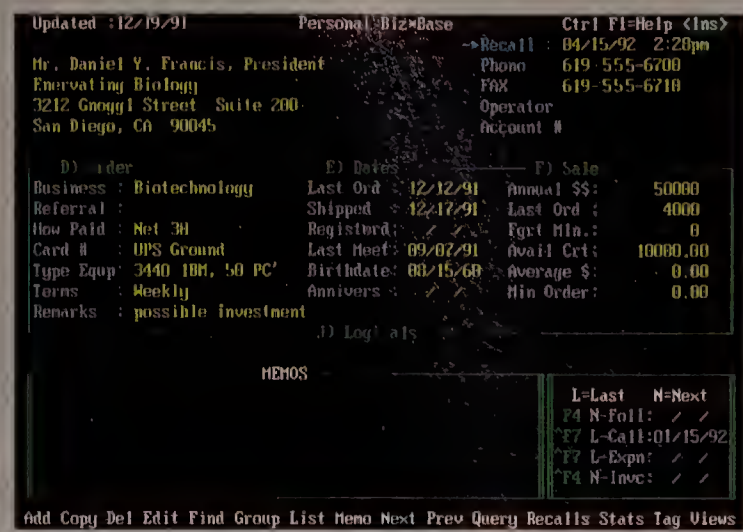
Reader service no. 785

Citrix Multiuser 2.0

Based on IBM's OS/2 version 2.0, Citrix Multiuser 2.0 is a powerful, reliable multiuser operating system that delivers all popular PC applications at a cost far below that of a traditional PC network. Unlike the earlier version, which primarily supported mission-critical text-mode OS/2 applications, Multiuser 2.0 runs any combination of DOS, *Windows*, OS/2 1.*x*, and OS/2 2.0 packages—without memory constraints and with full graphics support. Once the host software is installed on a 386 or 486 desktop or tower, terminals can be added for about $900 per user—less if graphics support is not required. The system can be installed as a departmental network or as a network extender for NetWare, *LAN Manager*, LAN Server, or VINES. Multiuser 2.0 comes with a full suite of minicomputerlike security, remote access, and administration facilities. It costs $995 for a host with 5 users, $1490 for 10 users, and $1985 for 20 users; unlimited-use licenses also are available. Citrix Systems, 210 University Dr. #700, Coral Springs, FL 33071; 800/437-7503, 305/341-6880 (fax).

Reader service no. 786

Personal Biz*Base 2.2



Each record in Personal Biz*Base 2.2 provides space for detailed client information. The program holds up to 200 records in a single data base.

If you need a full-featured contact management program but blanch at paying several hundred dollars for it, *Personal Biz*Base 2.2* from Creagh Computer Systems is your $69.95 solution. *Personal Biz*Base 2.2* boasts the same legion of features as its high-end sibling *Biz*Base Gold*, which sells for $189.95. The one difference: *Biz*Base Gold* holds an unlimited number of records in as many data bases as you wish, while *Personal Biz*Base 2.2* only holds 200 records in a single data base. If you have more than 200 contacts to track, an additional $9.95 buys the *Biz*Key* disk, which will upgrade the program's capacity to an unlimited number of data bases with up to 500 records each. Notable features of *Personal Biz*Base 2.2* include *dBASE* compatibility, Boolean Logic searching, an unlimited report generator, and tracking of invoices, expense reports, phone calls, and correspondence. It also has a macro maker, a sophisticated calculator, a word processor, and an auto dialer. Biz*Base, Inc. 505 Lomas Santa Fe Dr.,#130, Solana Beach, CA 92075; 800/833-8892, 619/792-1367.

Reader service no. 784

For more information about any product, contact the manufacturer or circle the number on the reader service card.

Why Some Communications Software Don't Talk Real Good.

Something isn't quite right in the world of PC communications... Too many comm programs have far too few emulations and protocols. Others demand big bucks for more emulations and protocols than you could use in a lifetime. A lot of programs are simply shareware in a box. Many come from such small companies that the tech support is less than supportive. There's even one surprisingly well-known comm package which completely shuts up the minute you attempt a high-speed file transfer.

No Size Fits All.

To cap it all off, an appalling number of software manufacturers will tell you–with a straight face–that a single, "one size fits all" product is going to solve every communications need for every individual in every situation. Well it won't. We know. We invented the category.

All In The Family.

More importantly, we've developed the only truly workable solution for all the PC communications requirements out there. But it's not a disk.

It's a family. A family of communications solutions that's gone beyond Crosstalk® XVI and now ranges from high powered "programmers" programs to economical executive models. To Windows™ software. To remotes.

Best of all, the family works so well together that you can mix and match certain Crosstalk products to tailor-make your own communications solution. Get that mix just right–and you're looking at major cost savings.

Top Talkers

Compare the "stars" from *Software Digest.*

★★★★ Crosstalk Mk.4
★★★ HyperAccess/5
★★★ Mirror III
★★★ Smartcom Exec
★★★ Crosstalk for Windows
★★★ Smartcom III
★★ Procomm Plus

Crosstalk Even Opens Windows.

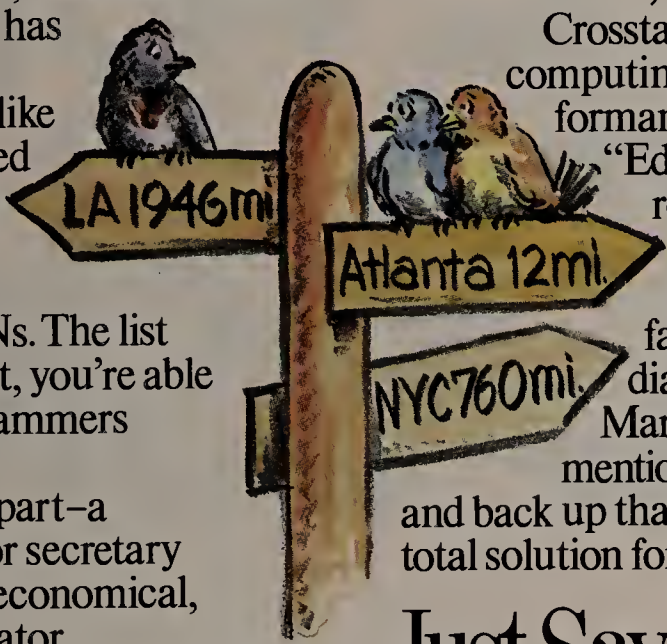
Since Crosstalk for Windows is a *true* Windows product, you can take full advantage of capabilities like multi-tasking. In other words, you can work on a spreadsheet while Crosstalk for Windows is calling Dow Jones News/Retrieval® in the background. Then, you can cut and paste that Dow Jones information into your document, or import it transparently through DDE, Dynamic Data Exchange. Like Crosstalk Mark 4, Crosstalk for Windows also runs on LANs. And since it combines the flexibility of Windows with the engineering excellence of Crosstalk, *Software Digest* calls Crosstalk for Windows the "best of the graphical communications packages."

Look Who's Talking.

Take Crosstalk Mark 4 and Crosstalk Communi-ator. In the hands of a programmer, Crosstalk Mark 4 an perform miracles. After all, it has he CASL™ scripting language (a owerful programming language like C or Pascal). Plus, highly specialized mulations (from VT™ emulators o FTTERM). Data transmission ates up to 115,200bps. Multi-essions. Modem sharing on LANs. The list oes on. With capabilities like that, you're able o create the kind of scripts programmers vrite home about.

Yet–and this is the amazing part–a ompany executive or salesman or secretary an run that very same script on economical, asy to use Crosstalk Communicator.

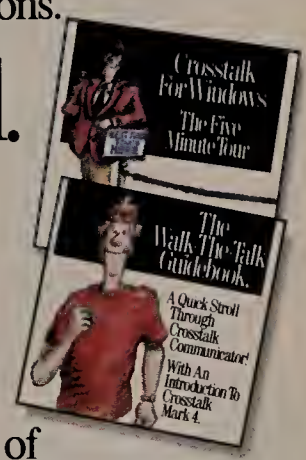
And while Crosstalk Communicator is the ideal omplement to Crosstalk Mark 4, it's a powerful little ackage that can also fly solo. It's simple enough to onfigure in three minutes, yet supports virtually all nodems plus direct connections. It has a Learn fea-ure. The most popular protocols and emulations. Even reconfigured log-in scripts for information services nd BBSs that can get you on line with a single key-troke. Calls to other systems like a VAX® are made with surprisingly little set-up. In fact, the built-in diag-nostics of Crosstalk Communicator "intelligently" uids all your installation and set-up for calls.



Remote, Yes. Alone, Never.

Crosstalk solutions even extend to remote computing. Remote2® gives you all the performance that made it the *PC Magazine* "Editors' Choice." Not only is it a remarkably straightforward and economical package, it's also a fully fledged member of the Crosstalk family. It even has the same helpful dialing directory that's in Crosstalk Mark 4 and Communicator. Not to mention the same outstanding support and back up that have made Crosstalk the only total solution for PC communications.

Just Say The Word.



Sure, a lot of comm software "don't talk real good." But then, a lot of comm software isn't Crosstalk. So, find out how Crosstalk can overcome your communication gaps. All you have to do is call and we'll send you a free working model of Crosstalk for Windows or Crosstalk Communicator, which includes information on Crosstalk Mark 4!

For Your Free Working Model Call 1-800-348-DCA-1, ext. 82C.

Crosstalk Mk.4 "does almost everything and does it right."
"Crosstalk Communicator...for the price, it's hard to beat."
"...Crosstalk for Windows is a sure bet."
–PC Magazine (April, 1991)

CROSSTALK®

Another Communications Solution From DCA®.

92 Digital Communications Associates, Inc. All rights reserved. DCA, Crosstalk and Remote2 are registered trademarks and CASL is a trademark of Digital Communications Associates, Inc. All other brand and uct names are trademarks or registered trademarks of their respective owners. Reprinted from Software Digest Ratings Report, Vol. 7, No. 12, PC Labs test reprinted from PC Magazine, April 30, 1991, Vol. 10, No. 8.

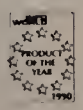
April 1991 Crosstalk Mk 4

April 1991 Crosstalk Communicator

June 12, 1990 Remote2 Version 2.0A

★★★★ Vol. 7 No. 12! 1990 Crosstalk Mk.4

April 30, 1991 Crosstalk Mk.4 Version 2.0


1990 Crosstalk for Windows

Circle 62 on reader service card

A Laser on Every Desk

A fully loaded laser printer for under $1000? Believe it. With one of these nine compact personal lasers, you can put printing power where it's needed most.

By Daniel Miles Kehoe

What's the biggest drain on your productivity? Too many meetings? Too much paperwork? Waiting for *Windows* to load? For many users the worst time-waster is printer gridlock: Print jobs arrive at the work-group printer faster than it can process them, impatient co-workers are obliged to wait in line, and as a result, activity in the office grinds to a halt.

The solution, of course, is to buy more printers and spread them around the office. Until recently, that meant purchasing lower-quality dot matrix printers; the expensive laser printers had to be shared among as many workers as possible. But now you can find laser printers with list prices starting under $1000 and street prices that are even lower. And you won't compromise much on fonts or performance—today's personal lasers are faster and more sophisticated than ever.

Even if your budget is tight, low prices will allow you to deploy a personal laser printer wherever one is needed:

- Does your business manager waste time hiking to the work-group printer whenever she prints a spreadsheet? Put a stripped-down 4-page-per-minute (ppm) laser on her desk for $800.
- Does your clerk-typist churn out letter after letter, tying up the network printer in the process? Give him his own $1000 9-ppm speed demon.
- What about your in-house publishing specialist, who has to wait for everyone else to log off the network before printing all those fancy fonts and sophisticated

graphics? Buy a PostScript printer for $1295 and let her print what she wants when she wants it.

• And what about you? Do you have to race down the hall to the network printer every time you print a letter that you'd rather not have the whole office see? With prices this low, no one will call you extravagant for buying a laser of your own.

Not surprisingly, none of these little printers are designed to be used by more than one or possibly two or three people at a time. Few of them have the advanced features required of shared printers, such as automatic port and emulation switching, configurable ports, dual paper bins, and long duty

Buying Smart: Picking a Personal Laser

When you're buying a low-end laser printer, you can't expect to get all the fancy fonts and speedy, sophisticated paper handling you'd find in more expensive printers. But even when you're spending less than $1000, you should demand a lot. At the very least, you'll want crisp, professional-looking output and reasonably fast performance.

OUTPUT QUALITY

Because all the printers we reviewed have 300-dot-per-inch resolution, almost all deliver reasonably sharp text. A few of them lost points because of *jaggies*—the stair-stepping pattern you sometimes notice on the curves of letters—and *shadowing*—the blurring of characters by faint outlines of themselves. Also, many low-end printers have problems with graphics output: They often produce streaks in solid areas of black or gray and apply toner unevenly.

PERFORMANCE

Print speeds vary widely from printer to printer and from print job to print job. The Printer Works LX-29000, for example, came in first printing an *Excel* spreadsheet but dead last producing a *Word for Windows* document. We ran these printers through a variety of tests, including straightforward word processing files, spreadsheets, and complex desktop publishing jobs, so you can check out the speeds for the kind of work you do.

You should note that rated engine speeds can be misleading. The Texas Instruments microLaser Plus, for example, which is rated at 9 ppm, achieved a top-of-the-line 6.3 ppm in our *WordPerfect* test; the 6-ppm Sharp JX-9500 actually hit 6.2 ppm on the same test. Speeds plummeted on graphics tests; for example, the top speed in our *PageMaker* test was the Printer Works LX-29000's not exactly smoking 0.73 ppm.

PRICE

The whole point of personal laser printers is their low price—shop around and you'll find some great deals. Our street prices represent national averages; you may find prices both lower and higher. Our prices are also for machines with our testing configuration of 2.5MB of RAM, so if you don't need that much memory, you can find bare-bones versions of the same printers for hundreds less. Remember, however, to add in the cost of consumables to your budget: These printers will require a new toner cartridge every couple thousand pages.

SERVICE AND SUPPORT

Because printers are mechanical beasties with plenty of moving parts that can break, solid service and support are essential. All the printers in this roundup come with one- or two-year warranties. When it comes to repairs, look for on-site service from the manufacturer, but if you can't get it, check your dealer's repair policies. Shipping your printer back to the factory for service can put you out of commission for a long time.

In rating service and support, we looked at the length and breadth of the warranty and the availability and quality of support. To judge the latter, we called each vendor three times and asked questions of varying complexity. We then rated their answers for timeliness and accuracy.

DESIGN AND CONSTRUCTION

Convenience is the best measure of good design. With this in mind, we awarded points for small footprints, low weights, and integrated toner-drum assemblies that aren't a mess to change. You'll also want understandable front-panel controls—all but one of the printers we looked at had controls and an LCD on the front panel. All of them come with a parallel port, but some also have a serial and/or an AppleTalk port, so you can share the printer with your neighbor. Those printers with automatic port switching are able to detect a print job coming in through a particular port and switch to that port on their own; others have to be switched manually. We did look at the rated duty cycle, but with a skeptical eye: These figures are not based on any standard defi-

58% OFF

PLUS A FREE DISK!

Subscribe to PC WORLD and save 58%. Plus, receive 50 Free Utilities.

You'll receive FREE our Powerbase*•* Disk complete with 50 tips and Utilities to use with your software packages. Tips and tricks for:

- WordPerfect
- WordStar
- Turbo Pascal
- Turbo C
- Lotus 1-2-3
- Paradox
- Basic
- And much, much more!

☐ Yes, I want to stay ahead of the competition with PC WORLD's product reviews, hot news and How To tips and techniques. I'll pay only $19.97 for 12 monthly issues-almost 58% off the annual newsstand price-plus I'll receive FREE PC WORLD's PowerBase*•* Disk.

Mail this card or call 800-825-7595

NAME _____

COMPANY _____

ADDRESS _____

CITY/STATE/ZIP _____

Basic annual subscription price is $29.90. Savings based on annual newsstand price of $47.40. Please allow 6 to 8 weeks for delivery of your first issue. Offer good only in the U.S. PowerBase *•* diskette is offered solely by PC WORLD Magazine. It should not be confused with 'power-base' which is relational database software offered by Compuware Corporation.

PC WORLD

Recycled Paper

4HW86

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

cycles. If you're going to print lots of graphics- or font-intensive documents, you'd probably be better off with one of the PostScript printers reviewed in our December issue, or else a Hewlett-Packard LaserJet III or compatible printer offering PostScript-level fonts and graphics handling with the PCL 5 language. These printers sell in the $1700 to $2500 range and provide enough work-group features for shared usage (see "Best of the Rest: More Personal, More Printer"). For really high-volume work-group printing, you'll want a high-duty-cycle network printer selling for between $5000 and $10,000.

Personal Proof Positive

For this review, *PC World* looked at nine personal lasers with list prices under $1400. We configured each printer with 2.5MB of RAM, enough to comfortably print a full page of graphics or download a passel of fonts. Street prices for this testing configuration ranged from $916 to $1450, but if you'll be satisfied with the standard 512K of RAM that most of these printers offer, you can pay as little as $600.

We ran these lasers through a variety of speed and compatibility tests. We then cast a critical eye on the quality of the resulting output. Finally, we checked out their font options, paper handling, design, and customer service. In judging overall value, print quality and speed were given the greatest weight, followed by price and the remaining factors.

After the toner dust settled, one printer emerged with a Best Buy: the speedy, low-priced Epson ActionLaser II. Honorable mention goes to the Printer Works LX-29000, the one printer we looked at that comes with PostScript compatibility standard. The C.Itoh ProWriter CI-4, Hewlett-Packard LaserJet IIP plus, and Star Micronics LaserPrinter 4 also proved to be superb deals.

With personal laser printers this affordable, you can put a couple of them on the right desks and ease the workload for the whole office. By making printer gridlock a thing of the past, they make real bottom line sense.

Daniel Miles Kehoe has written about laser printers for PC World *for four years. He is a contributing editor for* NeXTworld *magazine.*

For more information about all products in this article, circle reader service no. 903.

nition of usage, and your mileage will inevitably vary.

FONT/GRAPHICS OPTIONS

Most of these printers do a fine job with typical office correspondence. They come with an adequate supply of resident bit-mapped fonts—the Star Micronics LaserPrinter 4 comes with 165, and most of the others come with 14 or more—and they all emulate Hewlett-Packard's standard PCL 4 printer language, meaning they should be compatible with most of your software. Four can emulate the old Epson FX/LQ dot matrix language—handy if you're using older applications.

If the resident fonts aren't enough for you, you can either add a font cartridge or download soft fonts. All but one of these printers have at least one cartridge slot (and the one that doesn't is PostScript compatible). Look for printers that take HP-compatible font cartridges, because they give you access to a wide range of fonts and emulations from both HP and third-party vendors. If you're stuck with just one vendor's cartridges, you won't have the same range of options.

Most of the printers here can be upgraded to PostScript with the addition of a cartridge or a plug-in controller card. Upgrade cartridges start at around $400, and cards can be had for $450; cards are faster than cartridges. PostScript gives you a choice of 35 internal fonts as well as better output quality, especially with graphics.

If you want to download fonts or print full-page graphics, figure you'll need 1.5MB of memory. PostScript also calls for more memory, at least 2MB, and if you consistently print multipage documents with lots of graphics, such as newsletters or big spreadsheets, or if you download a lot of fonts, you'll want at least 4MB of RAM to make these print jobs proceed at a reasonable pace.

PAPER HANDLING

Personal printers don't need as sophisticated paper handling as a network machine does. But even on a personal printer, a large paper tray means you spend less time running to the supply cabinet for another ream of bond. Good output capacity means you won't have long print jobs spilling all over your desk. And it's always nice to be able to print on legal-size paper and envelopes as well as letterhead without having to buy a special tray—look for printers with adjustable trays that can accommodate more exotic paper sizes. If you print a lot of letters and your printer has the option of dual bins, you might consider buying a second tray so you can load letterhead in one bin, envelopes in the other, and then switch between them.

C.Itoh ProWriter CI-4

PROS: Crisp output, low price, small footprint, three ports standard
CONS: Low RAM capacity

The CI-4 is the archetypal personal laser printer: cheap, small, reasonably fast, and flawless at text printing. It's one of two printers in the roundup that received top scores for both text and graphics output quality—edges were crisp and distinct, and blacks were nice and solid. With a footprint of only 227 square inches and the flexibility of three standard ports, this printer could find a home in almost anyone's cubicle.

The CI-4's only real drawback is that it can be expanded only to a maximum of 2.5MB of RAM, which could be a problem if you're doing lots of graphics or decided to upgrade to a PostScript cartridge. So though the CI-4 may not be your best choice for desktop publishing, at only $967 on the street, it delivers excellent output quality without taking up too much desk space—which is just about everything that a personal laser printer is supposed to do.

The affordable CI-4 will do a beautiful job on text documents as long as you don't need exotic fonts.

The Best Buy Epson ActionLaser II gives you excellent output and top speed for a remarkably low price.

Epson ActionLaser II

PROS: Top-of-the-line output, very fast, low price
CONS: Big footprint, limited paper handling

If you need your documents fast, pretty, and chock-full of fonts, the Epson ActionLaser II is ready to please—and for a low $930 street price. Like the C.Itoh ProWriter CI-4, the ActionLaser II earned top scores for print quality, but it was also quick on the uptake, especially in our *Word for Windows* test. The ActionLaser II comes with 14 Courier fonts resident, but gives you plenty of other font options: two cartridge slots, room for a hearty 6MB of RAM, and an Epson FX/LQ emulation. You can also upgrade to PostScript by popping in an optional upgrade card.

The Epson is not designed for volume use—its standard paper tray is not adjustable and has a low capacity. But this personal printer is clearly the best we reviewed—its price, performance, and output quality add up to a terrific Best Buy.

Hewlett-Packard LaserJet IIP plus

PROS: Very good output, fast, low price, versatile paper handling
CONS: No toll-free tech support, no second cartridge slot

When Hewlett-Packard replaced the IIP with the new IIP plus, they didn't just add a plus sign to the name: They also boosted performance and reduced the list price by about $50. For a low $1008 on the street, you'll enjoy fast, high-quality output, especially with text.

The IIP plus carries on the HP tradition of smart design. It has a tiny 221-square-inch footprint and at 22 pounds is the lightest unit in the roundup. If you plan to print at a fairly high volume, you'll appreciate the robust rated duty cycle of 8000 pages per month, and if you print a variety of documents, you'll like the IIP plus's optional second bin and its capability to handle almost any kind of paper, including envelopes. You get only one cartridge slot, but you can use it to add a PostScript language cartridge. This multitalented printer is one of the best values here, especially as a straight-ahead text printer.

With the new IIP plus, you get big printer performance in a small personal laser package.

Personal Printers Improve Font Power, Paper Handling

The best of the personal laser printers, the Epson ActionLaser II gives you more font options and better paper handling than you might expect in a small, inexpensive printer.

● Yes
○ No

	C.Itoh ProWriter CI-4	Epson ActionLaser II	Hewlett-Packard LaserJet IIP plus	Kodak Ektaplus 7008	Okidata OL400 LED Page Printer	Printer Works LX-29000	Sharp JX-9500	Star Micronics LaserPrinter 4	Texas Instruments microLaser Plus
Standard features									
Street price[1]	$967	$930	$1008	$1450	$916	$1295[2]	$1057	$1054[3]	$1108
List price[1]	$1245	$999	$1249	$1395	$999	$1295	$1399	$1395	$999
Rated speed (ppm)	4	6	4	8	4	4	6	4	9
Design and construction									
Footprint (square inches)	227	270	221	248	306	253	190	350	190
Weight (pounds)	28.7	30	22	37.5	24	26	33.5	24.5	33
Rated duty cycle (pages per month)	2500	3000	8000	5000	3000	5000	3000	2500	10,000
Front-panel controls	●	●	●	●	●	○	●	●	●
Front-panel LCD	●	●	●	●	●	○	●	●	●
Integrated toner-drum cartridge	○	●	●	○	○	●	○	●	○
Parallel port	●	●	●	●	●	●	●	●	●
Serial port	●	●	○	●	●	●	●	●	●[4]
AppleTalk port	●	●[4]	○	○	○	●	○	●[4]	●[4]
Automatic port switching	○	●	○	○	○	●	○	○	○
Font/graphics options									
Resident fonts	14	14	14	14	17	35[5]	12	165[6]	5
Epson FX/LQ emulation standard	●	●	●[4]	○	○	○	○	●	○
PostScript	●[7]	●[8]	●[7]	●[7]	○	●	○	●[8]	●[8]
Cartridge slots	1	2	1	2	1	0	2	1	2
Takes HP-compatible cartridges	●	●	●	●	○	○	○	●	○
Standard/maximum RAM (MB)	0.5/2.5	0.5/6	0.5/4.5	1.5/2.5	0.5/2.5	5/9[9]	0.5/4.5	1/5	0.5/4.5
Paper handling									
Standard/maximum input capacity	100/400	100/250	70/320	200/200	200/200	75/325	250/500	50/300	250/500
Legal-size paper	●	●[4]	●	●	●[4]	●	●[4]	●	●[4]
Envelopes	●[10]	●[4]	●	●[10]	●[4]	●	●[4]	●	●[4]
Optional second bin	●	●	●	○	○	●	●	●	●
Adjustable trays	●	●	●	●	○	●	○	●	○
Standard maximum output	100	50	50	200	200	50	230	50	250
Service and support									
Warranty (years)	1	2	1	1	1[11]	1	1	2	1
Toll-free technical support	●	●	○	●	○	○	●	○	○
Daily support hours	8	9	11	9	10	9	10	8	8
On-site service available	●	●	●	●	●	●	○	○	●
Fax/BBS support	●/●	●/●	●/○	●/○	○/○	●/○	●/○	●/●	●/○
		BEST BUY							

[1] Price based on 2.5MB RAM unless otherwise noted.
[2] Direct sales only; with 2MB RAM, 3MB ROM.
[3] With 3MB RAM.
[4] Extra-cost option.
[5] Scalable PostScript typefaces.
[6] 14 resident, 151 on free bundled cartridge.
[7] Extra-cost cartridge.
[8] Extra-cost controller card.
[9] 2MB RAM, 3MB ROM.
[10] Manual feed.
[11] Five years on LED print element.

Kodak Ektaplus 7008

PROS: High-quality output, very fast

CONS: Most expensive in roundup, some poor design details, low RAM capacity

At $1450 on the street, the Ektaplus 7008 is the most expensive printer in this review, but its speed may justify the price: It placed near the top on most speed tests, particularly with long documents. Text quality was excellent, and graphics quality was good, with nice, even toner coverage. Also, Kodak's customer service was among the best we encountered, with fast callbacks and accurate answers.

Some design details need attention: The two-part consumables package is messy, and the membrane control panel is unresponsive. You'd better have a big desk—the printer's shape is unwieldy, and the 37½-pound weight is back wrenching. Also, the printer has room for only a lowly 2.5MB of RAM. But if you can overlook these flaws, you'll get rapid, high-quality output, with fast technical help when things go wrong—just the ticket for dedicated clerical printing.

If you can afford the $1450 price, the Ektaplus 7008 gives you sharp output without a lot of waiting around.

The OL400 is the least expensive laser on the market, but low speed and unexceptional quality are major trade-offs.

Okidata OL400 LED Page Printer

PROS: Rock-bottom price

CONS: Slow, mediocre output, balky tech support, big footprint

The Okidata OL400 is the lowest-priced printer in our group—$916 on the street. It's also slow, finishing last or next to last on four out of our five speed tests and three times slower than its closest competitor on our *1-2-3* test. Print quality was somewhat disappointing, with jaggies on some characters and vertical streaking of gray shades on graphics.

The OL400's design needs to be updated as well—the footprint is the second largest in the roundup, and setup was difficult, resulting in a toner spill. Although the OL400 gives you a few more resident fonts than most printers do, it has just one cartridge slot, lacks a PostScript option, and limits you to a low 2.5MB of RAM. Though the OL400 comes with a generous five-year warranty, technical support was below par; too many calls to tech support went unanswered. Still, if price is your major concern, you can't get a laser for less than this.

Printer Works LX-29000

PROS: Built-in PostScript compatibility, excellent graphics print quality, superb support

CONS: No front-panel controls, no cartridge slots

Unlike other printers reviewed, the LX-29000 comes standard with PostScript compatibility, in the form of the TrueImage page description language. This means you get 35 typefaces in any size you like, plus smooth edges and curves for graphics. With 2MB of RAM and 3MB of ROM standard (the ROM for the TrueImage typefaces, the RAM for incoming print jobs), the LX-29000 also delivers graphics quickly, finishing first on our *PageMaker* and *Excel* tests.

The printer's greatest deficiency is its interface. It has no front-panel controls and only four LEDs to provide messages; you adjust settings with software. Still, at $1295 list (direct from the manufacturer, so there's no street discount), the LX-29000 is a nice bargain when you take into account what you'd have to pay for a PostScript upgrade to any of the other printers reviewed here.

The LX-29000 gives you PostScript compatibility for the lowest possible price.

TrueType: Opening Windows on Scalable Type

When *Windows 3.1* ships this spring, it may change the way many users think about printing, because Microsoft is bundling its TrueType font-scaling technology with the new version of its popular operating environment.

There's little argument about the benefits of scalable fonts. They give you the versatility of different typefaces and point sizes without jamming your hard disk and your printer's memory with libraries of slow-loading bit-mapped characters.

Until now, the best way for many users to get font scaling was from programs like *Adobe Type Manager* (*ATM*) and Bitstream's *FaceLift,* which generate fonts on the fly from outlines and send the resulting bit maps to the printer. With these programs, you get all the fonts you want without clogging your system with megabytes of bit-mapped type collections or spending thousands on hardware. You can print the downloaded type on any printer, from dot matrix to laser, though the printer will think it's producing a graphics page, significantly reducing output speed. Also, as a pleasant by-product, these programs give you screen fonts—nice and readable at both small and large point sizes—that mimic the printed result.

Microsoft promises that TrueType will have all the advantages of software font scaling, with none of the problems. Since TrueType will be fully integrated into *Windows,* you won't have to load separate scaling programs, drivers, or fonts that may have compatibility problems. Microsoft also claims that TrueType will be faster than other font scalers and will also avoid the compatibility problems—such as screen flicker, slow refresh rates, and a ceiling on the number of fonts you can actually use—that have plagued other scaling programs.

Like *ATM,* TrueType includes a font rasterizer, plus a baker's dozen of outline typefaces. When you type a character, *Windows 3.1* finds the appropriate TrueType typeface file and calls up the rasterizer, which then scales the font outline, generates a bit map, tunes the bit map for the specific resolution of your screen, and sends the bit map to the display.

Microsoft says TrueType shouldn't have any compatibility problems with other fonts. If you have fonts in your printer equivalent to those you've requested in *Windows,* TrueType will let the printer use its own type, as do *ATM* and other programs. The result: faster performance. You shouldn't have any problems adding to your font library, either—Microsoft claims that Adobe Type 1 fonts will work with TrueType (as long as you have *ATM* as well), and third-party font vendors have already announced their own TrueType fonts.

How will the appearance of TrueType affect your printer buying decision? Apparently, only slightly. For one thing, you'll still want some resident fonts in your printer, because you may need them for non-*Windows* applications and because resident fonts should still be faster than any downloaded type. One possible impact: If you print primarily text and not graphics, using TrueType (or *ATM,* for that matter) means you don't need as much printer RAM as you would if you were downloading entire font sets.

What about PostScript? TrueImage is to TrueType what PostScript is to *ATM*: The first describes pages, the

second describes type. TrueImage and TrueType were both developed by Apple and Microsoft, PostScript and *ATM* by Adobe. TrueImage and PostScript reside in output devices, such as printers; TrueType and *ATM* reside in your computer, whence they can control output to both printer and screen. Microsoft says TrueImage is a "superset" of PostScript, fully compatible but more powerful.

If you send *ATM*-compatible type to a PostScript printer, you'll get faster output because the fonts in PostScript printers are *ATM* fonts; similarly, Microsoft claims, TrueType will be more effective if you're using a TrueImage printer, such as the Printer Works LX-29000.

Because it has built-in TrueType fonts, a 4-ppm TrueImage printer will have a slight speed advantage over other 4-ppm printers when printing from *Windows 3.1,* but it won't perform better than printers with faster engines. Microsoft also claims that TrueType fonts printed on a TrueImage printer will have the advantage of a "richer hinting technology," but we suspect that only a typographic expert would be able to tell the difference.

Even if TrueType ends up performing no better than *ATM,* its impact should be considerable. Its availability to all *Windows 3.1* users and its transparent operation will open up the world of scaled fonts to a whole new wave of users.

Sharp JX-9500

PROS: Low price, good design, good paper handling

CONS: Limited font selection

Like the Okidata OL400, the Sharp JX-9500 has been around for a while, but unlike the OL400, the JX-9500 is holding up pretty well. This printer's greatest assets are its low $1057 street price, strong paper-handling skills, and intelligent design. The standard and optional input trays hold 250 sheets each, but even with accessory trays, this compact printer will fit in the snuggest of corners.

On the other hand, output quality isn't anything to shout about—blacks were light, toner coverage was uneven on graphics, and text characters looked fuzzy. The JX-9500 lagged on all speed tests except the *WordPerfect* long-document benchmark. The JX-9500 gives you two cartridge slots but has no PostScript option or HP cartridge support. But low price, flexible paper handling, and fast long-document performance make the JX-9500 a good choice for long drafts and merged mailings.

With its low price, flexible paper handling, and adequate speed, the JX-9500 would work best as a draft printer.

The fast LaserPrinter 4 offers an impressive number of fonts but is less successful with graphics.

Star Micronics LaserPrinter 4

PROS: Fast, great text quality, low price, 151-font cartridge

CONS: Poor graphics quality, big footprint

At $1054 on the street, the Star Micronics LaserPrinter 4 is a bargain, and it also ranks among the fastest printers we tested. But the real argument in its favor is its embarrassment of riches in terms of font options. Star Micronics bundles a free 151-font cartridge with every printer, giving you access to all of Hewlett-Packard's most popular fonts, so with the 14 fonts already on-board, you get a grand total of 165 fonts out of the box. You also get a PostScript option, and you can use third-party HP-compatible font cartridges.

Output quality, however, is a mixed bag. Text was top-notch, but graphics suffered from streaky gray shades and uneven toner coverage. Also, the LaserPrinter 4 had the biggest footprint of any printer we reviewed. Still, this printer is a great choice, particularly if you want lots of fonts for your money.

Just Your Type: Personal Output

Sharp JX-9500

in the trade as a
matter: It's easy
the pretenders.

Texas Instruments microLaser Plus

in the trade as a
matter: It's easy
the pretenders.

Epson ActionLaser II

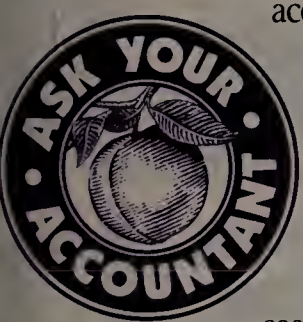
in the trade as a
matter: It's easy
the pretenders.

Our Best Buy Epson ActionLaser II scored perfectly on text, producing crisp, black letters. Two of the printers were judged to be only fair at text output: the Sharp JX-9500 and the Texas Instruments microLaser Plus. They both had problems with shadowing, when characters are faintly doubled, making them blurry, and jaggies, when curves appear jagged.

New $99 Peachtree Basic. Easy-To-Use PC Accounting From The People Who Invented It In The First Place.

At Peachtree, we've been doing accounting on personal computers longer than anyone. In fact, we created the very first accounting program for the IBM PC, the award-winning Peachtree Complete.

Since then, nearly half a million small businesses have come to depend on us. Maybe that's because more accountants recommend Peachtree to their clients than any other small business accounting software.



Now we're making it even easier for small businesses to get their accounting done – simply and affordably. With new Peachtree Basic Accounting.

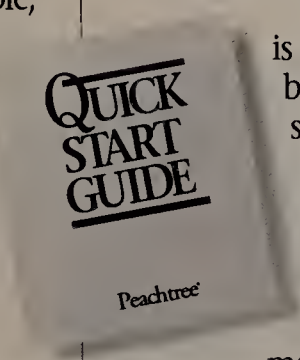
Our Easiest, Most Affordable Software Ever.

We designed Peachtree Basic to be easy to learn and use. It comes with everything you need to start running Accounts Payable, Accounts Receivable, General Ledger, Invoicing, and Inventory, on your own PC.

And – unlike some low-priced programs – Peachtree Basic lets you keep your books in a real double-entry accounting format. That's bound to make your accountant a lot happier – and maybe even save you some money.

Easy To Get Started. Easy To Keep Growing.

Our Quick Start Guide and Tutorials will have you up and running in a matter of minutes, without having to read a stack of manuals. Plus, our primer helps with terms and functions for both accounting and DOS.



Best of all, Peachtree Basic is designed to grow as your business grows. You can start with just one module, if you like, and easily add the others to your system as you need them. You can even purchase our popular PeachPay module and start managing your company's payroll with your computer. (There's a discount coupon right in the box.) Or simply upgrade to our full-featured accounting program, Peachtree Complete, for just a few dollars more.

Nobody Supports Small Business Like We Do.

At Peachtree, we want you to swear by our products, not at them. So we back Basic with a nationwide network of support centers, and a 60-day money-back guarantee.

So go ahead. Ask your accountant about Peachtree Basic. After you're convinced, visit your local dealer or call PeachLine at (800) 428-9974.

Peachtree®

The first name in small business accounting software.™

☎ *PEACHLINE. If you need help deciding which Peachtree product is right for your business, or you'd just like a catalog of our products, talk with one of our accounting specialists at (800) 428-9974.*

©1992, Peachtree Software, Inc., Norcross, GA • All products are trademarks of their respective companies.

Circle 144 on reader service card

The World Standard

First Edition ★★★★★ Everything you've been missing

HIDDEN PLOTS DISCOVERED

Desktop Mapping Held Responsible

For years organizations have had to rely on spreadsheets and other data analysis techniques to interpret information. But apparently, they've been missing a lot. The new technology of desktop mapping is revealing just how much.

As spokesmen at MapInfo,® the leader in desktop mapping, put it: "By advancing relational database technology to incorporate data with maps, MapInfo has produced a breakthrough in analysis capabilities. It is literally 'showing' its users patterns, relationships and trends that they never knew existed.

"In the process, it's allowing them to understand and present information more quickly, clearly and thoroughly. It's helping them deploy their resources more realistically and profitably. It's showing them how to target customers, service territories and optimize sales. It's helping them plan land use, select site locations, and efficiently manage facilities and operations.

"In a word, it's allowing them to visualize and take advantage of options and opportunities that other data analysis techniques simply can't show."

With MapInfo, you can overlay data from dBASE (DBF), Lotus 1-2-3, Excel, delimited ASCII, plus many other formats, and relate it to thousands of maps, down to street level on Windows, DOS, Macintosh, Sun and HP.

Free Demo Disk Tells Inside Story

It's called *Desktop Mapping The MapInfo Way*. Our reviewers call it the premier guide to discovering what's hidden inside your data.

Call 800-358-7676 x400, or Fax 518-274-0510 for your copy. Then stay tuned for more good news from The Standard On The Streets.®

MapInfo

The Standard On The Streets™

France (33) 1 48060648, Germany, Austria, Switzerland (49) 2102 497 1000, Italy (39) 6 3455334, Scandinavia (46) 8 6440950, Spain (34) 3 4143265, U.K. (44) 81 5074601, Remaining European Countries (31) 3443 3004, Australia 02 437 6255, Israel 03 561 0946.

All trademarks are the property of their respective owners. MapInfo is a registered trademark of MapInfo Corporation.

Circle 150 on reader service card

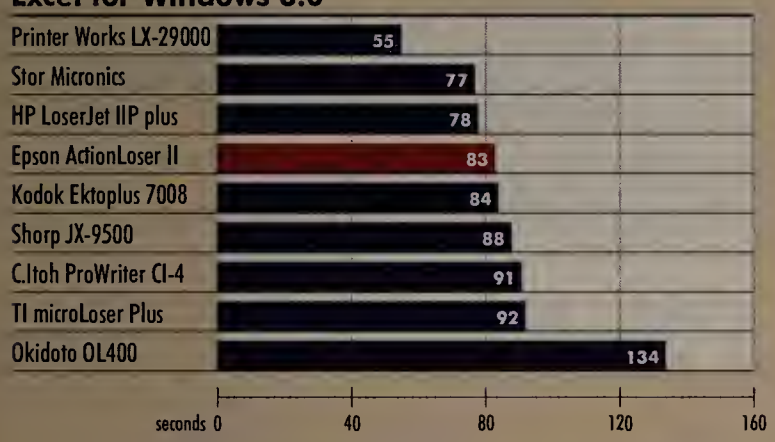
PC WORLD TEST REPORT

Jack-of-All-Trades Beats the Specialists

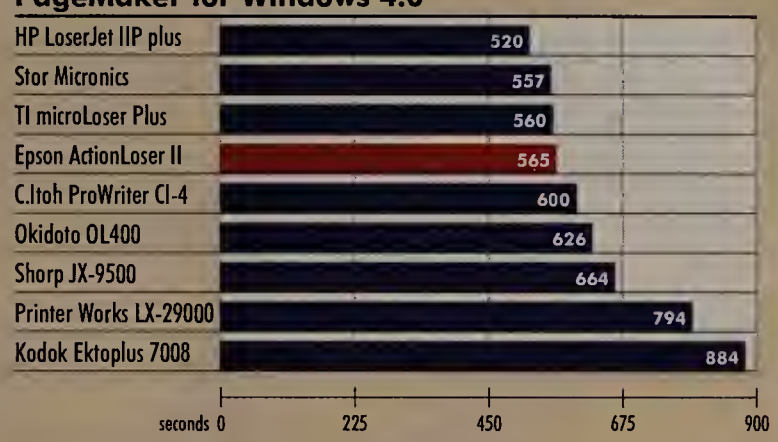
The Printer Works LX-29000 was fastest at producing graphics, and the Texas Instruments microLaser Plus was fastest at printing text, but for consistent speed on a variety of printing tasks, the Epson ActionLaser II was tops.

BEST BUY

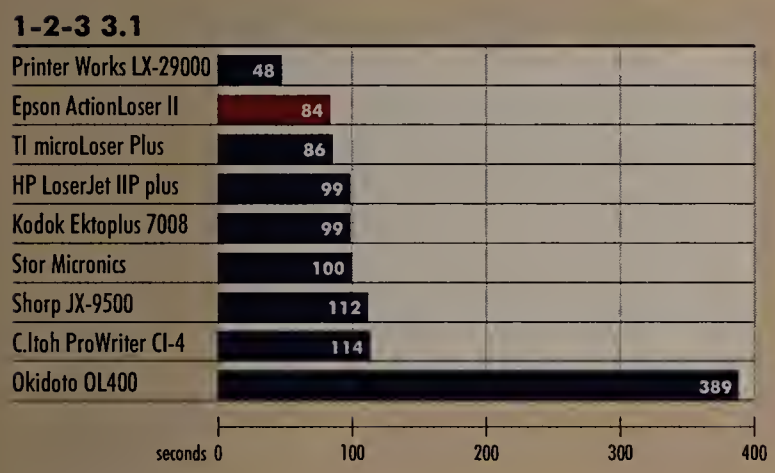
Excel for Windows 3.0



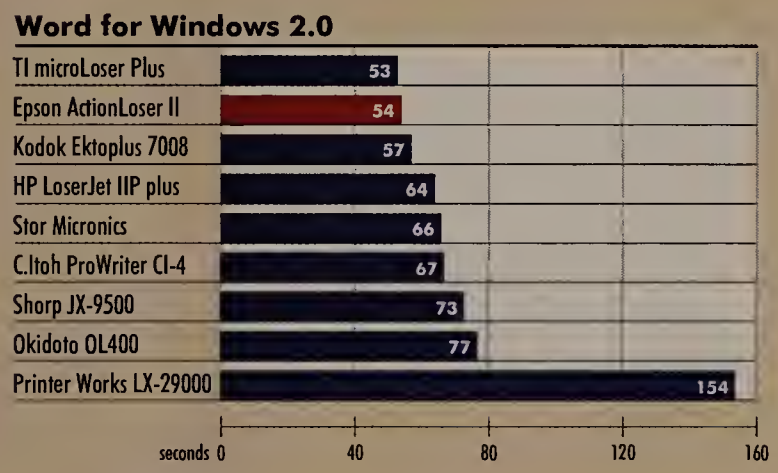
PageMaker for Windows 4.0



1-2-3 3.1



Word for Windows 2.0



Methodology
All printers are connected to the parallel port of a 20-MHz Compaq Deskpro 386/20e running under DOS 5.0 with 4MB RAM and a 110MB hard disk. The applications used in the benchmarks are installed on the hard disk along with their test files in discrete subdirectories. Tests are timed from the moment the print command is initiated until the last page is ejected from the printer.

Excel for Windows 3.0
We print a single-page document composed of two pie charts with slices containing various shades of gray.

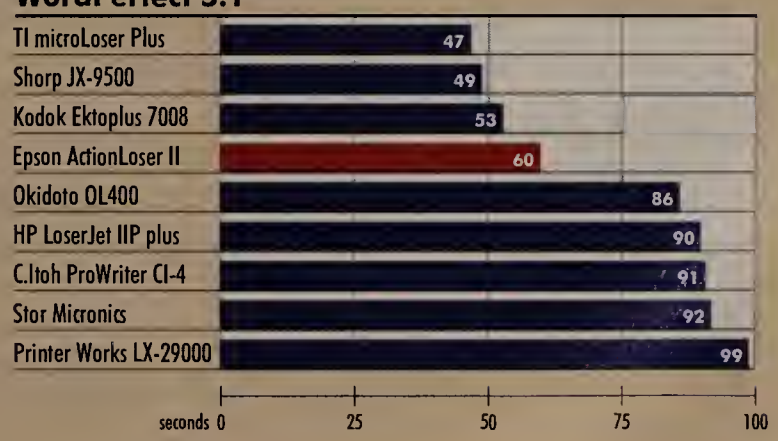
PageMaker for Windows 4.0
We print a single, newsletter-style page that contains a small scanned TIFF image, a large PCX masthead, and Helvetica and Times Roman text with varying attributes.

1-2-3 3.1
We print a simple stacked bar chart.

Word for Windows 2.0
We print a single-page document composed of 10-cpi Courier text with a sampling of 16.66-cpi baldface and underlined text.

WordPerfect 5.1
We print a five-page document composed of 10-cpi Courier text enhanced with boldface and underlining.

WordPerfect 5.1



Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Texas Instruments microLaser Plus

PROS: Excellent print speed, low price, sturdy design

CONS: Small choice of fonts

For a reasonable $1108 street price, the Texas Instruments microLaser Plus delivers superb performance—it came in first in our *Word for Windows* and *WordPerfect* tests. Its speed is due in part to an innovative design that pulls paper into the engine early in the printing cycle. Among the printers we reviewed, the microLaser also has the highest rated duty cycle—10,000 pages per month—and smallest footprint—190 square inches, same as the Sharp JX-9500.

The microLaser's output quality, though not the best, was still passable for everyday use. Font options are fairly limited: The printer has two cartridge slots and a PostScript option, but only five resident fonts and no support for HP cartridges. Despite these drawbacks, if you need to do a lot of draft printing at high speeds, you'll like the microLaser's fast performance and capable paper handling.

With its high speed and low price, the TI microLaser Plus is the quintessential workhorse draft printer.

Best of the Rest: More Personal, More Printer

A new generation of surprisingly sophisticated, low-cost personal printers has arrived. Here are some models that didn't make it into our review, all priced under $2000 list.

Model	List price	Roted engine speed (ppm)	Resident fonts	PCL	PostScript compotible	Standord/ maximum RAM (MB)	Cartridge slots	Paper capacity (sheets)	Footprint (square inches)	Weight (pounds)
Bézier BP4040	$1895	4	35	PCL 4	Y	5/5 [1]	0	50	391	26
Brather HL-4V	$1595	4	6	PCL 5	aptianal	1/5	2	50	223	26.5
Canon LBP-4 Plus	$1545	4	25	n/a	aptianal	2.5/4.5 [2]	2	50	213	22
C.Itah PraWriter CI-8	$1695	8	22	PCL 5	optional	1/5	2	250	246	30.9
Hewlett-Packard LaserJet IIIP	$1595	4	22	PCL 5	aptianal	1/5	1	70	221	22
Lexmark LaserPrinter 5e	$1595	5	26	PCL 4	aptianal	1/9	2	200	292	33.6
Okidata OL830	$1999	8	17	PCL 4	Y	2/4	1	200	313	24
Panasanic KX-P4430	[3]	5	22	PCL 5	N	1/5	1	200	226	30
Tandy LP 950	$1599	6	6	PCL 4	N	0.5/2	2	250	195	33
Texas Instruments micraLaser Plus PS17	$1399	9	17	PCL 4	Y	1.5/4.5	2	250	190	33
Texas Instruments micraLaser Plus PS35	$1749	9	35	PCL 4	Y	1.5/4.5	2	250	190	33

[1] 2MB RAM, 3MB ROM.
[2] 0.5MB RAM, 2MB ROM.
[3] Not available at press time.

For more information about all products in this sidebar, circle reader service no. 904.

WHERE TO BUY

Bezier Systems Inc.
800/444-2624,
408/345-0345
Reader service no. 749

Brother Int'l Corp.
908/356-8880,
908/469-5167 (fax)
Reader service no. 750

Canon USA Inc.
516/488-6700
Reader service no. 751

C-Tech Electronics, Inc.
800/347-4017,
714/757-4473
Reader service no. 752

Hewlett-Packard Co.
800/752-0900
Reader service no. 754

Lexmark Int'l, Inc.
800/426-2468,
Reader service no. 755

Okidata
800/654-3282,
609/778-4184 (fax)
Reader service no. 756

Panasonic Communications and Systems Co.
800/742-8086,
201/348-7000
Reader service no. 757

Tandy Corp.
817/390-3011
Reader service no. 758

Texas Instruments, Inc.
800/527-3500,
800/847-2787
Reader service no. 759

THE SCREAMING SPEED YOU NEED

Windows Accelerators, from $499*

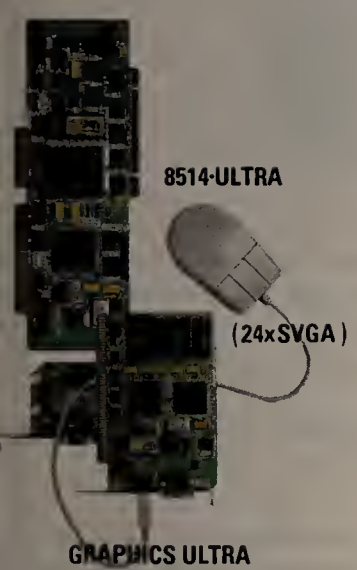
Where we're going, there are no speed limits. ATI® Graphics Accelerators boost graphical applications like Windows® to escape velocity — and beyond.

PC Magazine picked our 8514•ULTRA® as their Editors' Choice among high-end graphics cards, calling it "...the fastest Windows performer." Now our new Graphics Vantage® takes its place alongside the 8514•ULTRA and the Graphics ULTRA®, as the most economical way of accelerating your PC beyond earthbound speeds.

Powered by the same Mach 8® graphics engine as the ULTRA products, the Graphics Vantage delivers resolutions from VGA® upward, and propels 800x600 and 1024x768 modes — in 256 dazzling colors — to over eleven times the speed of Super-VGA adapters. It's like transforming your 386 into a rocket-powered 486 — instantly.

Our CRYSTAL Fonts® and flicker-free refresh rates — up to 72 Hz — clarify Windows with "near laser quality" text, readable down to 5 points even on 14" monitors. We've also equipped the Graphics Vantage with a Microsoft®- compatible mouse — and a down-to-earth price that will definitely give you no cause to scream — except perhaps with amazement.

ATI Graphics Accelerators. Because in today's world, there's no such thing as "fast enough."



GRAPHICS ULTRA

One of the ATI Graphics Accelerators™

PC MAGAZINE EDITORS' CHOICE
June 25, 1991
ATI 8514-ULTRA

BEST OF SPRING COMDEX 1991
BYTE
GRAPHICS VANTAGE

See Us At
WINDOWS WORLD '92
The Official Conference and Exposition for Windows Computing
April 6-9, 1992
McCormick Place • Chicago, Illinois USA
Booth # W1808

ATI TECHNOLOGIES INC.
3761 Victoria Park Avenue
Scarborough, Ontario
Canada M1W 3S2
Telephone: (416) 756-0718
User Support: (416) 756-0711
Facsimile: (416) 756-0720

Copyright © 1991 ATI Technologies. Trademarks are registered by their respective companies. *Suggested retail price, dealers may sell for less.

Circle 5 on reader service card

LASERNET®

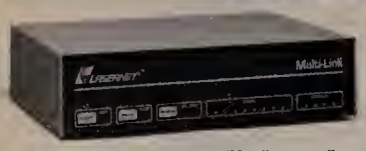
The Sharing Family With Peripheral Vision

Only Western Telematic's LASERNET sharing devices have true peripheral vision — the widest family of products to meet the needs of today's data sharing requirements. Whether it's a simple sharing set-up or a complex network — LASERNET has a device to fit your need and budget.

Western Telematic has peripheral vision in support software too! LASERNET provides easy-to-use device-select software operable with both Windows™ or MS-DOS® applications.

You won't need glasses to see that LASERNET offers the widest selection and best value for your money. Just take a close look at these LASERNET models and see which one fits your application:

HIGH-LEVEL



Multi-Link™

Serial/parallel device for twelve or more users. Expandable, through dedicated high-speed link, up to 384 any-to-any, user-selctable ports, over 4000 feet. Perform printer/plotter sharing, modem/FAX sharing, PC-to-PC file transfer and more.

- 12 concurrent high-speed ports — 8 serial, 4 parallel
- High-speed link — up to 32 Multi-Link devices — 384 total ports!
- Dynamically allocated, field-expandable SIMM memory — 256 KB to 4 MB
- RJ-11 serial ports for snap-in cabling
- Any-port-to-any-port connectivity
- Any-port designation for printer or plotter
- Each port individually programmable
- Windows or DOS pop-up menu software for instant device selection and status
- Uses standard parallel PC-to-printer cables

12 any-to-any ports; buffered from 256 KB to 4 MB ..... start at $795

GENERAL

PSU-82C/SP

Programmable sharing units for both serial/parallel printers, plotters and PCs. Designed for CAD/CAE, high-level graphics, Desktop publishing or general applications.

- 4 concurrent serial and 4 parallel inputs (SP)
- 8 concurrent serial inputs (C)
- 1 serial and 1 parallel output
- Expandable buffer memory from 256 KB to 2 MB
- Separate baud rate, flow control, parity and messages for each port
- Pop-up menu software for easy printer/plotter selection
- Easy menu-driven configuration and set-up
- Prompt and response messages for plotter applications
- Support all laser printers including PostScript® printers and all types of plotters.

8 inputs; 2 outputs; buffered from 256 KB to 2 MB ..... start at $595

QwikShare® III

Low-cost, expandable, all-parallel, high-speed printer sharing system. From one to 32 PCs independently share up to three remote and one local parallel laser/dot-matrix printer or plotter.

- Expandable to 32 PCs by adding Expansion Modules
- Memory expandable up to 4 MB
- Printer Select Switch — no software or TSR program required
- All parallel port connections — PCs, printers and plotters
- Maximum network distance — 4000 feet
- Quick and easy installation using snap-in, RJ-11 cable & standard parallel cables

Printer Server; buffered from 256 KB to 4 MB ..... start at $295
Expansion Module with Printer Select Switch ..... $149 ea.

QwikShare® II

Low-cost, buffered printer sharing. Supplied with Windows and MS-DOS device-select software which provides pop-up menus for easy printer port selection.

- 6 RS-232 serial inputs - RJ-11 connectors
- 2 user-selectable laser/dot-matrix printer ports
- Expandable memory to 2MB using SIMMS
- Input speeds up to 115K baud

6 inputs; 2 outputs; buffered from 256 KB to 2 MB ..... start at $295

BASIC

QwikShare®

Complete, plug-n-go, "no-wait" sharing system. Up to six IBM PCs or compatibles can share a serial laser/dot-matrix printer or plotter. Each system contains: sharing unit; super-fast spooling software; three — 9- and 25-pin connectors; four —25 ft. PC cables; one —5 ft. printer cable & connector. Compatible with most popular graphics, word processing and spreadsheet software including Microsoft® Windows™.

6 inputs; 1 output; $195

LASERNET products are **made in U.S.A.**, and backed by a **3-year** limited warranty with service and technical support. To get a closer look at LASERNET, just call on our technical sales representatives.

To order* or for More Information, Call Toll-Free
1-800-854-7226

wti western™ telematic inc.
Making good connections.℠

5 Sterling, Irvine, CA 92718 • FAX (714) 583-9514

See us at FOSE '92, BOOTH #4224

*Visa, MC Accepted; Same Day Shipping

Circle 325 on reader service card

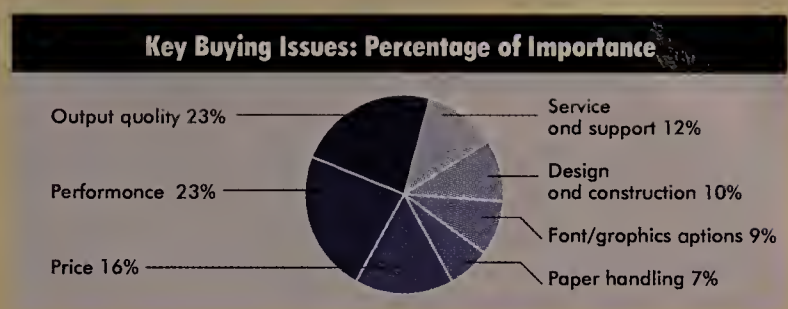
© Copyright - 1991 Western Telematic Inc. All rights reserved. LASERNET and QwikShare are registered trademarks, and Multi-Link, Western Telematic and WTI Logo are trademarks of Western Telematic Inc. All other registered trademarks are property of respective companies.

EXECUTIVE SUMMARY

Epson's Ready for Action

Fast, high-quality output for a low price makes the Epson ActionLaser II our Best Buy.

Our Best Buy, the **Epson ActionLaser II,** is an aggressively priced entry in the low-end laser market. Other printers can match its output quality, price, or speed, but none puts them all together in one box. The **C.Itoh ProWriter CI-4, Hewlett-Packard LaserJet IIP plus,** and **Star Micronics LaserPrinter 4** were close runners-up, and the **Printer Works LX-2900** is notable as the lowest-priced PostScript-compatible printer on the market.



Excellent ★★★★
Good ★★★
Fair ★★
Poor ★

	Reader service number	Output quality	Performance	Price	Service and support	Design and construction	Font/graphics options	Paper handling	Overall value
C.Itoh ProWriter CI-4	740	☆☆☆☆	☆☆☆	☆☆☆☆	☆☆☆	☆☆☆½	☆☆½	☆☆☆	☆☆☆½
Epson ActionLaser II	741	★★★★	★★★★	★★★★	★★★	★★★	★★★½	★★½	★★★★
Hewlett-Packard LaserJet IIP plus	742	☆☆☆½	☆☆☆½	☆☆☆☆	☆☆☆	☆☆☆☆	☆☆☆	☆☆☆½	☆☆☆½
Kodak Ektaplus 7008	743	☆☆☆½	☆☆☆☆	☆½	☆☆☆½	☆☆½	☆☆½	☆☆☆	☆☆☆
Okidata OL400 LED Page Printer	744	☆☆½	☆	☆☆☆☆	☆☆	☆☆	☆½	☆☆☆	☆☆
Printer Works LX-29000	745	☆☆☆½	☆☆☆	☆☆½	☆☆☆½	☆☆☆	☆☆☆☆	☆☆☆	☆☆☆½
Sharp JX-9500	746	☆☆	☆☆☆	☆☆☆½	☆☆☆	☆☆☆½	☆☆	☆☆☆½	☆☆☆
Star Micronics LaserPrinter 4	747	☆☆☆	☆☆☆½	☆☆☆½	☆☆☆	☆☆☆	☆☆☆☆	☆☆☆	☆☆☆½
Texas Instruments microLaser Plus	748	☆☆	☆☆☆☆	☆☆☆	☆☆☆	☆☆☆½	☆☆	☆☆☆½	☆☆☆

Overall value is praduced by multiplying each categary rating by its weight percentage, summing the results, and grading an a curve ta the nearest half number.

WHERE TO BUY

C. Itoh ProWriter CI-4
C-Tech Electronics
2515 McCabe Way
Irvine, CA 92713
800/347-4017
LIST PRICE: $1245
ACCESSORIES: 1MB RAM upgrade $230; toner cartridge $29.50
Reader service no. 740

Epson ActionLaser II
Epson America
20770 Madrona Ave.
Torrance, CA 90503
800/922-8911
LIST PRICE: $999
ACCESSORIES: memory expansion board $65; toner cartridge $125
Reader service no. 741

Hewlett-Packard LaserJet IIP plus
Hewlett-Packard
19310 Pruneridge Ave.
Cupertino, CA 95014
800/752-0900
LIST PRICE: $1249
ACCESSORIES: 1MB RAM upgrade $230, toner cartridge $95
Reader service no. 742

Kodak Ektaplus 7008
Eastman Kodak
901 Elmgrove Rd.
Rochester, NY 14650
800/344-0006
LIST PRICE: $1395
ACCESSORIES: 1MB RAM upgrade $250; toner cartridge $25
Reader service no. 743

Okidata OL400 LED Page Printer
Okidata
532 Fellowship Rd.
Mount Laurel, NJ 08054
800/654-3282
LIST PRICE: $999
ACCESSORIES: 1MB RAM upgrade $239; toner cartridge $33
Reader service no. 744

Printer Works LX-29000
The Printer Works Inc.
3481 Arden Rd.
Hayward, CA 94545
800/225-6116
LIST PRICE: $1295
ACCESSORIES: 1MB upgrade $300; toner cartridge $77
Reader service no. 745

Sharp JX-9500
Sharp Electronics
Sharp Plaza
Mahwah, NJ 07430
800/237-4277
LIST PRICE: $1399
ACCESSORIES: 1.5MB RAM upgrade $519; toner cartridge $59
Reader service no. 746

Star Micronics LaserPrinter 4
Star Micronics America
420 Lexington Ave.
New York, NY 10170
800/447-4700
LIST PRICE: $1395
ACCESSORIES: 1MB RAM upgrade $299; toner cartridge $95
Reader service no. 747

Texas Instruments microLaser Plus
Texas Instruments
P.O. Box 202230
Austin, TX 78714
800/527-3500, 800/847-2787
LIST PRICE: $999
ACCESSORIES: 1MB RAM upgrade $239; toner cartridge $42
Reader service no. 748

© 1992 TigerSoftware, 800 Douglas Entrance, Suite 765
Coral Gables, Florida 33134

The Internationally Proven Language Translation Software.

As businesses seek to expand into the European markets, there has been an explosion in language translation software. No wonder! — this massive market of European countries tops 350 million (compared to only about 290 million in the United States) and will require communication, at some point, in these languages. Forget books and foreign language dictionaries! The power of the computer makes learning, writing and understanding other languages faster and easier than ever before. Here at Tiger, we've seen a dramatic rise in interest for these products in anticipation of the 1992 "common market" revolution. So, we went to work testing several packages.

Our results are conclusive: Collins On-Line is the superior system, whether you have experience with a foreign language or have none at all.

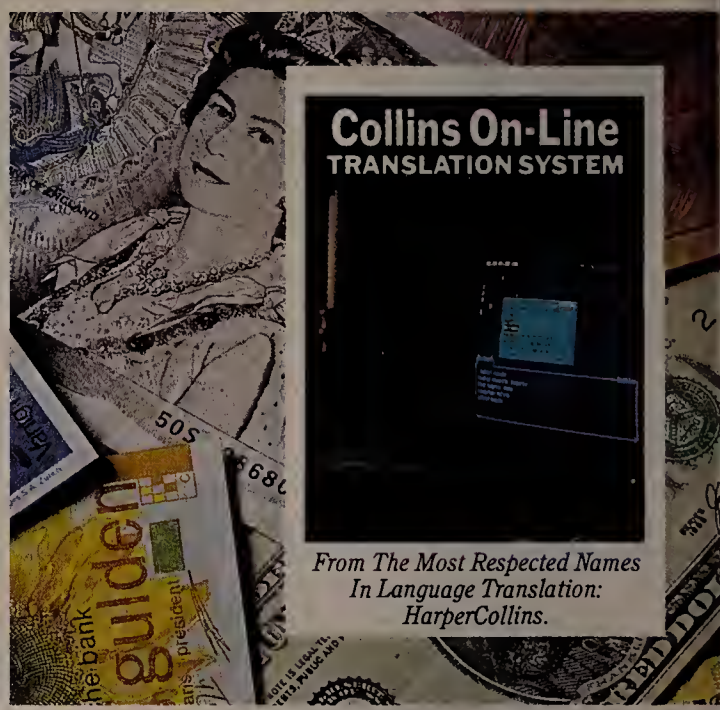
The reason for this distinct advantage is the quality of proprietary HarperCollins bilingual dictionaries built into this product. These extensive dictionaries are combined with exceptional technology that allows instant access to translations of any word or phrase from within your word processor — with just a keystroke. The software provided with Collins On-Line is so flexible, it actually becomes an extension of your word processor! Translate back and forth with over 35,000 translations each way (more than any other source), perform quick look-up and instant paste, get help with selecting just the right translations (that accurately match context), helpful usage notes, and more. It is the easiest to use, by a wide margin, that's of particular importance with foreign language products.

With Collins On-Line, second-language writing and communication becomes a pleasure! If you intend to compete internationally, this is a must purchase. It's also an excellent tool for students, just starting out with a second language, or anyone who has ever studied a foreign language and now would like to use it.

Collins On-Line vs. The Competition.

Our tests resulted in three sources for fast, accurate translations: 1. Hiring a professional, accredited human translator; 2. Using Collins On-Line and doing it yourself; and 3. Using another translation software. In our head to head tests, we ran Collins On-Line against MicroTac.

We found that in many cases, where time is critical, a human translator is the best way to go. Just fax them the English document and they fax back the translation. Our first international Tiger ads were prepared that way. However, when we began doing the translations in-house, we found nothing touches Collins On-Line. Its dictionaries are more complete, and the usage notes make it more accurate. With Collins On-Line you do not risk the embarrassment of sending out unreadable, machine translation in a foreign language. Collins On-Line has no machine translation of whole sentences and paragraphs or other gimmicks. Collins On-Line simply provides fast and easy access to the best bilingual dictionaries available today. MicroTac contains dictionaries far less in size and contains weak context and usage information. It's no surprise. The HarperCollins technology grew from a merger between Collins, the highly respected European dictionaries, and Harper & Row, the U.S. publishing giant, known for their educational and linguistic books. This enormous bilingual database has been incorporated into this remarkable software title.



From The Most Respected Names In Language Translation: HarperCollins.

Languages Available...
English/Spanish & Spanish/English
English/French & French/English
English/German & German/English
English/Italian & Italian/English
French/Spanish & Spanish/French
French/German & German/French

Coming Soon... Collins On-Line companion products

COLLINS ON-LINE

BBD4310 **Collins On-Line** **$79.95**
Add on dictionary for $39.95.

MULTIMEDIA

Interactive, Full-Motion Digital Sound CD-ROM!

Combining Stereo Sound, FM Synthesizers, MIDI Sequencers and Interative CD Graphics!

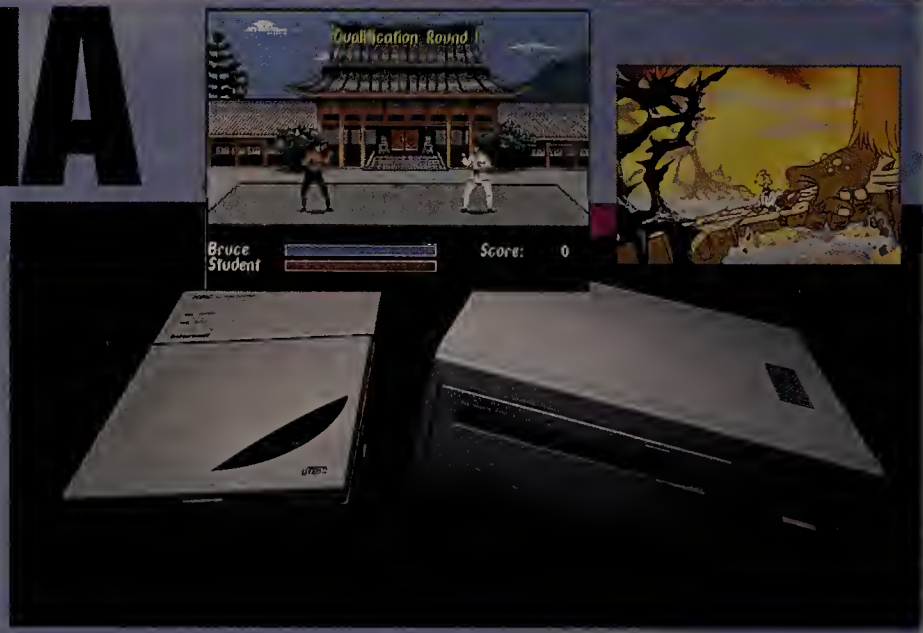
REVIEWER'S NOTEBOOK: *The impact of combined sight, sound and movement is dramatic and not easily forgotten. If you make presentations or conduct training, the ability to communicate effectively can be enhanced with this hot new technology: featuring FULL-MOTION VIDEO. More Multimedia CD titles are being released every day. These discs are packed with show-stopping, integrated sound with photo-quality images, language instruction with spoken lessons and pronunciation — along with explosive games and entertainment software. To run MPC-approved Multimedia, you need a PC, a CD-ROM reader, an audio board, Windows (with Multimedia Extensions) and speakers or headphones.*

Multimedia will change the way people use their computers. As the power of the PC catches up to man's ability to dream, create and inform, the introduction of sound will have the same impact as the "talkies" did on silent movies. It unleashes another sense.

In learning, the ability to mix audio instruction with visual reinforcement is a powerful tool. The PC becomes a skilled educator with the addition of sound. With multimedia comes the interactivity that full-motion video provides, giving the user a "feeling of being there." The training and presentation possibilities are endless for Multimedia. Create full-motion catalogs, parts lists, databases and demonstrations. Create your own Multimedia images, logos and designs.

The NEC MPC CD-ROM readers are the best built in the industry, with advanced design and workmanship to deliver high-performance, TV-quality video. Plus, you get compact disc-quality sound — not fuzzy, inaudible monotones. Spoken words are crisp and lifelike; instruments and effects sound like master recordings. Fast data access and state-of-the-art components are the trademarks of the NEC MPC readers. After all, NEC is a founding member of the MPC consortium, a driving force in developing and establishing MPC standards.

TigerSoftware is proud to be among the first to have these amazing instruments. Turn your ordinary PC into a wonderfully creative tool.



NEC MPC CD-ROM READERS

Here's What You Get...	BBD8436 CDR-36M MPC External Drive	BBD8473 CDR-73M MPC External Drive	BBD8483 CDR-83M MPC Internal Drive
CD-ROM CD-ROM Reader	$449.00	$ 675.00	$599.00
Complete Interface MPC kit w/Audio Board and CD-ROM SCSI Interface	428.00	428.00	428.00
Multimedia World Atlas	149.00	149.00	149.00
Toolworks Illustrated Encyclopedia	395.00	395.00	395.00
Toolworks Reference Library	149.95	149.95	149.95
Time Compact Almanac	199.95	199.95	199.95
World & U.S. Atlas	109.95	109.95	109.95
Guinness Disc of World Records	79.95	79.95	79.95
Mammals	149.00	149.00	149.00
Toolworks Game Pack	79.95	79.95	79.95
Family Doctor	149.95	149.95	149.95
Britannica Family Choice CD	604.00	604.00	604.00
CD Launch and Play Menu Disc	99.95	99.95	99.95
U.S. History	395.00	395.00	395.00
TOTAL RETAIL VALUE	**$3,438.65**	**$3,664.65**	**$3,588.65**
YOUR COST...	**$999.00**	**$1198.00**	**$1149.00**

TIGERSOFTWARE To Order Call Toll-Free: **1-800-888-4437** We Accept: VISA

Circle 259 on reader service card

Mon.-Fri. 8AM-10PM, Sat. 8:30 AM-8:00PM & Sun. 11AM-5PM (EST).
Or, use our 24-hour fax line: (305) 444-5010.

1-800-888-4437

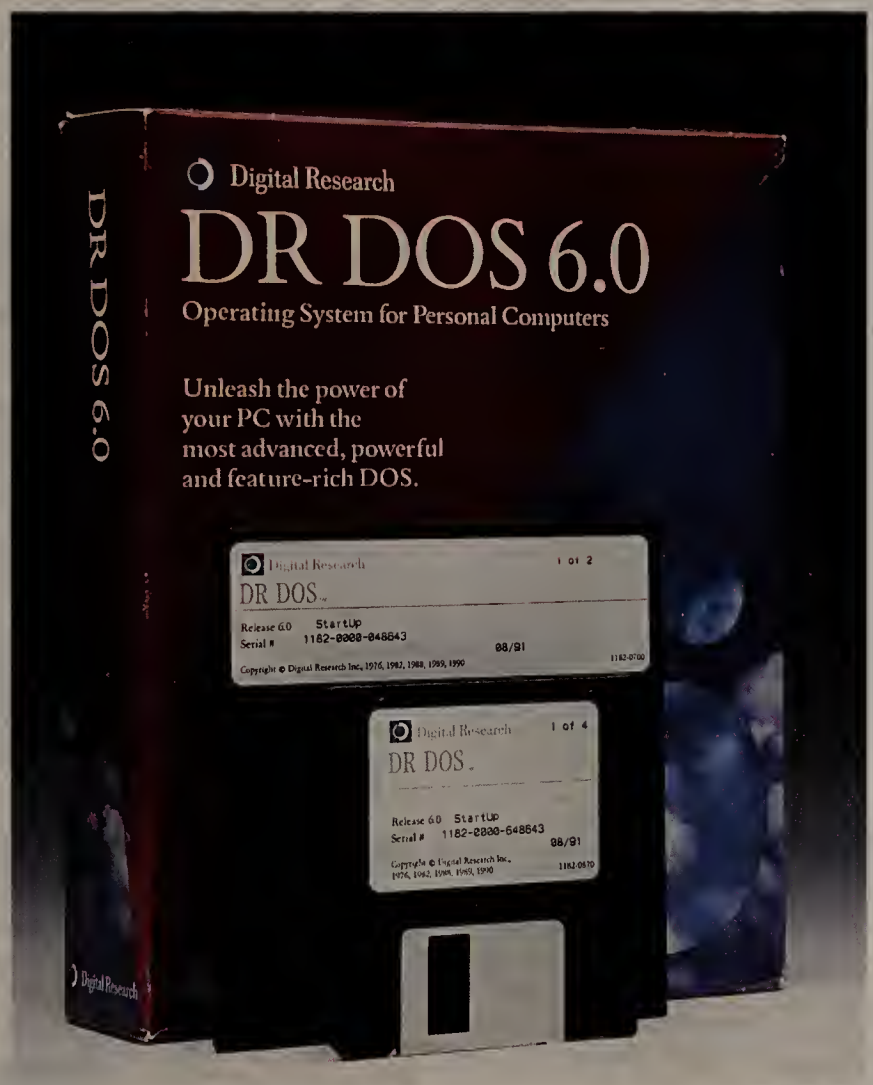
DR DOS VS MS-DOS

VERSION 6 VERSION 5

DR DOS DOMINATES!

REVIEWER'S NOTEBOOK: *Number two tries harder. If you want to run your DOS, Windows and networking applications faster and easier, while maximizing your hard disk's performance, Digital Research has the answer: DR DOS 6.0. InfoWorld awarded DR DOS 6.0 its Buyer's Assurance Seal, eclipsing MS-DOS 5.0 and virtually running away with the scoring. High marks everywhere for this software masterpiece, particular superiority in disk management, task switching and Windows support.*

The new MemoryMAX feature moves DR DOS, buffers, drivers, TSRs and network software outside your 640K, leaving DOS, network and Windows plenty of elbow room. The more powerful your machine, the more memory you'll reclaim. For us, this was the most compelling feature. We also applaud DiskMAX, a collection of unmatched disk utilities: disk optimization, compression and state-of-the-art disk caching. All integrated, all ready to use. TaskMAX, another advanced feature, allows you to load up to 20 applications at a time — then switch from one to another instantly. Cut and paste between these applications. TaskMAX automatically switches to extended or expanded memory; switching between programs is instantaneous. Extensive testing proves that DR DOS 6.0 clearly outperforms MS-DOS 5. It's the disk operating system that Microsoft doesn't want you to know about...



DR DOS 6.0 is DOS without the drawbacks, designed specifically to overcome the flaws that MS-DOS users have complained about from the beginning. And while MS-DOS 5 has come a long way, it's still not as fast, as easy or as rich in useful features as DR DOS.

InfoWorld and *BYTE* agree. DR DOS 6.0 brings a new level of memory management to the disk operating system, taking full advantage of high and upper memory — even on PCs and XTs. You'll get up to 627K on i386 and i486 machines (up to 629K on 286s, and 8086/8088 machines will see up to 621K). MS-DOS 5 still requires a memory manager to perform competent loading and memory enhancement.

Enjoy up to double the hard disk capacity with the new DiskMAX utilities (including defragmentation) and a dramatic increase in speed with DR DOS's high-performance caching. A note here: DR DOS 6.0 includes SuperStor as part of its DiskMAX utility collection. SuperStor increases the storage capacity of your hard disk with advanced file compression technology. Unlike conventional file compression software, Superstor employs sophisticated "on-the-fly" compression algorithms to expand the storage capacity of your drives (hard disk or floppy) by up to 300% — and in many cases more! You can store 2 to 3 times more on your hard drive without giving up the speed with this new technology. Now your 40 Mb drive can store 80-120 Mb. As a standalone product Superstor is a $119.95 value!

And with DR DOS, you can instantly recover deleted files, include password protection for files, directories, disk partitions and the system itself. The ViewMAX Graphical Shell provides an easy point-and-select interface for access to DR DOS functions, data and applications. The handy FileLINK quickly moves files from PC to PC via a serial cable. And the full-screen text editor includes a set of word processing tools that are always at your disposal.

MemoryMAX Advanced Memory Management

DR DOS 6.0 is the only operating system that can move TSRs, buffers, drivers, networking software, and the operating system itself outside of the conventional 640K memory area on 8086/8088, 80286, i386, and i486-based PCs. The result is more memory for your DOS, Windows, and networking applications:

- Up to 612K on 8086/8088-based systems with LIM 4.0.
- Up to 621K on 80286 systems with LIM 4.0.
- Up to 628K on 80286 systems using the NeAT, LeAP, or SCAT chipsets.
- Up to 627K on i386 and i486 systems.

DiskMAX Disk Optimization

At your option, DR DOS 6.0 uses dynamic file compression technology to compress hard disk partitions, resulting in a potential doubling of the data capacity of the typical disk partition. Once installed, disk compression is fully automatic and transparent — the only difference you'll see is a dramatic increase in available hard disk space.

DR DOS 6.0 defragments hard disks by gathering together parts of files that have become scattered over the disk as a result of typical PC use. When files are stored in contiguous blocks instead of being fragmented, your applications take less time to read and write to your hard disk — resulting in faster performance.

DR DOS 6.0 dramatically boosts the performance of DOS and Windows 3.X applications with the industry's leading high-performance disk caching program, Super PC-Kwik. Disk caching saves valuable time by storing data frequently used in memory, thereby reducing the need for programs to retrieve data from disk.

TaskMAX Task Switching

TaskMAX lets you load up to 20 applications at the same time, quickly switch between tasks, and copy and paste text and numerical data from one to another. You can run TaskMAX from the ViewMAX graphical shell or from the command line. TaskMAX can also be located outside of conventional memory, thereby maximizing the memory space available for each of the tasks being switched.

Unlike other task switchers, TaskMAX switches tasks by using extended or expanded memory, a virtual disk, or a hard disk — resulting in the fastest switching possible. Because most users will routinely want to switch between the same tasks, TaskMAX can automatically preload a specified list of tasks at startup time.

Security Features

DR DOS has several levels of security to safeguard your system and data, including power-on password protection; temporary keyboard locking; and password-protection partitions, directories, and files. For maximum flexibility, access to password-protected files and directories can be provided at different read/write/delete privilege levels.

Data Recovery

With DR DOS 6.0, information that once would have been lost is easy to recover. When a file has been accidentally deleted, "undelete" lets you recover it, even after intensive disk use, by reserving the space occupied by deleted files until a disk is filled up.

INCLUDES FREE

FormTool Gold

WHEN YOU BUY DR DOS 6.0

DR DOS 6.0

BBD3095 **DR DOS 6.0** **$89.95**

IBM PC or PS/2 compatible using Intel 8086/8088, 80286, i386, or i486 microprocessor; minimum of 512K RAM; two floppy disk drives, or one floppy and one hard drive (installation from a: drive required); monochrome or color display using VGA, EGA, CGA, MCGA, or Hercules graphics adapter.

International Orders: 305-443-8212 24-Hour Fax Line: 305-444-5010 **FREE** FEDERAL EXPRESS **SHIPPING**

Circle 259 on reader service card

Mon.-Fri. 8AM-10PM, Sat. 8:30 AM-8:00PM & Sun. 11AM-5PM (EST).
Or, use our 24-hour fax line: (305) 444-5010.

1-800-888-4437

Increase Your Disk Capacity (On The Fly) By Up To 300%...

This unique product, unlike conventional file compression software, employs sophisticated "on-the-fly" compression algorithms to expand the storage capacity of your drives (hard disk or floppy) by up to 300% — and in many cases more!

SuperStor is simple to install and is 100 percent guaranteed for safety. You don't have to buy any new hardware, fiddle with jumpers, switches, hardware interrupts or even open your computer! Just slip in the diskette and you'll instantly notice significant increases in capacity and speed.

SuperStor is perfect for all applications, including your word processor, spreadsheet, database, graphics and CAD/CAM systems. Specialized applications with highly compressible data can achieve an increase in capacity as much as 8 times — 800%. It supports DOS 3.2 and up including DOS 5.0, Dr. DOS, and Windows 3.0, and allows DOS 3.2 and 3.3 users to easily break the annoying 32 megabyte limitation.

Even with all this high-tech efficiency going on around you, SuperStor does not change the way you work. All compression and decompression occurs without your help. SuperStor's automatic operation eliminates the need to learn special commands or use specially created logic disks. You don't even have to hit one keystroke for this amazing product to work its magic. Just use your computer and applications like you always have.

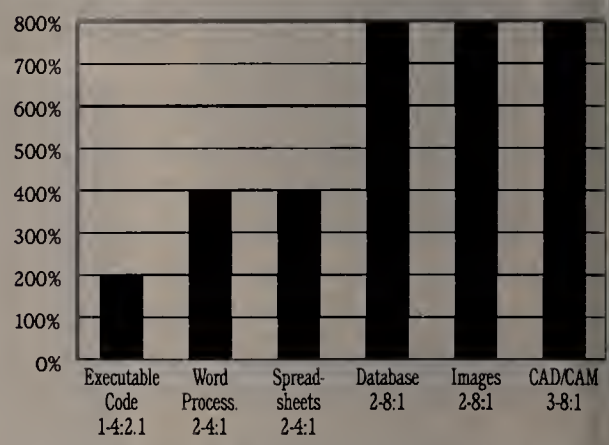
Your Word Processor And Spreadsheet Will Run As Fast As Ever!

SuperStor is the fastest data compression product on the market today, resulting in no measurable loss in your system's overall performance. All of your applications will run just as fast as they ever have. In fact, in some cases SuperStor will actually increase your system speed! SuperStor even includes a caching system that adds additional speed. How's that for power?

A little exploration into the easy-to-understand manual can reap some powerful rewards. For example, with just a couple of keystrokes you can create your own compression configuration. Compress your entire disk, or any portion of it, to maximize ease of use, compression efficiency and overall system performance. In just a few minutes, you can become an advanced SuperStor user.

How Much Space Can I Really Save?

The exact amount of compression you'll achieve depends on the data in the files you store on your computer. Files which use a limited number of characters or contain repeated sequences of characters will compress better than those containing purely random data. While this is true for many compression programs, SuperStor's advanced technology increases storage capacity even more. And SuperStor is the only compression system we've seen that compresses executable code. In addition to compressing the data in your files, SuperStor's ingenious file management techniques saves space on your disk by reducing the number of reserved byte units. Normally, these savings will amount to 4 to 8 times less space on your disk, regardless of the data in the file.



Reduce Time & Cost of Backing Up.

Since your data is now occupying less disk space, you'll find that backups now require less media. In fact, an average savings of 50% on the number of floppies is normal for SuperStor. And, of course, your backups are much faster. In addition, you can write on floppies in compressed mode for backups or, for exchange with other systems, in regular DOS format.

SUPERSTOR

BBD3865 **SuperStor** 5¼" & 3½" **$119.95**
Requires 512K memory.

Stunning Fonts For Your Printed Page.

High Quality Scalable Fonts

Don't just print plain text — fashion creative works of art that bond themselves to the reader. Impress upon the printed page aesthetic, stunning communications that magnetically draw readers to them. This is what professional "Desktop Publishing" is all about. This is what Publisher's Powerpak can do for your word processor.

You absolutely must have Freedom of Font Choice. Whether you print on a dot-matrix, inkjet or LaserJet-compatible printer, Publisher's Powerpak delivers the finest-quality fonts your money can buy.

Why Scalable?

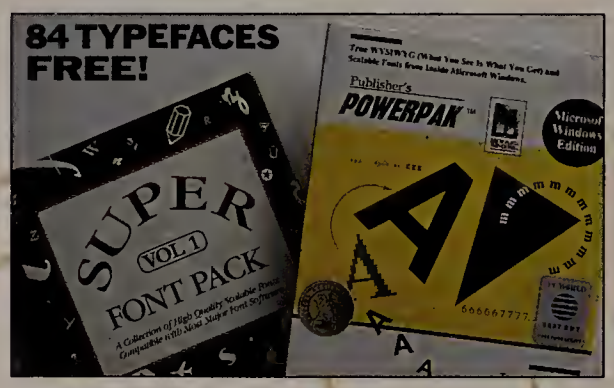
Publisher's Powerpak uses advanced scalable-font technology. When you need a font, you pick a size, and the needed letters are created instantly. The letters are scaled "on the fly" — as you need them. Scalable fonts use virtually no hard disk space — only 50K for an entire typeface family, which includes every size you'll want.

I used to use old-technology fonts (before the new scalable fonts came out). I had only 7 different typefaces. Each typeface had five sizes: 12, 14, 18, 24 and 36 point. My limited selection of fonts took up 10 megabytes of hard disk space!

Now I use Publisher's Powerpak. I have over 114 different typefaces to choose from. In any size I want, from 4 to 1,000 points (Word and Works limits point size to 127). With this seemingly unlimited selection of font choices, I actually use only 1⅓ megabytes on my hard disk. If I wanted this selection with bit-mapped fonts, I'd have to buy a 200 Mb hard disk!

Quality Fonts

Not all fonts are created equal. There are cheapies out there that print jagged letters and have strange character-spacing. That's why you want to stay with the choice of the pros. PC World recently declared Publisher's Powerpak the "Best Buy" of font software, and gave Powerpak's printer and screen fonts the highest quality rating — Excellent.



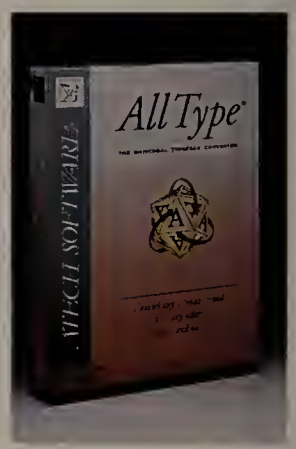
Super Font Pack, Volume 1 FREE — with every Publisher's Powerpak! A $150.00 value — FREE! 84 typefaces in normal, bold, italic, bold italic, thin, condensed, wide, expanded, and hollow.

Add-on Font Packs

Publisher's Powerpak includes 30 typefaces for an outstanding font-value. (Other font-makers charge $100 to $200 per typeface!) But that's just the beginning. There's an entire library of over 800 typefaces available for you to choose from. Plus foreign languages from Greek to Hebrew to Korean. When you're ready to add to your library, Atech font packs are filled with beautiful assortments of typefaces — two per pack for only $29.95 per package.

NEW! Convert and Use Any Font

If you have fonts, you'll love this new technological breakthrough. Now you can convert any font to any other font format! I changed all my Adobe PostScript fonts to Publisher's Powerpak fonts. When TrueType fonts arrive with Windows 3.1, I'll convert all those fonts too. With Atech's AllType, you can convert to and from all these font formats: **Adobe PostScript Type 1, Adobe PostScript Type 3, Atech Fast Fonts, Microsoft TrueType, Agfa Intellifont, GeoWorks Ensemble, DTC Nimbus Q, CorelDRAW!** and from Bitstream, **Fontware.**



It's so simple to install and use, and you can rename fonts in the process. Don't be fooled — this is high-quality stuff. AllType even converts "hinting" information, which changes spacing and other characteristics for certain font sizes. (Very important for small fonts.) You can create variations like bold, compressed, expanded, hollow and thousands of other variations all from your original typefaces.

PUBLISHER'S POWERPAK

BBD4095-3 **Powerpak for WordPerfect** 3½" . **$69.95**
BBD4095-5 **Powerpak for WordPerfect** 5¼" . **$69.95**
BBD4330 **Powerpak for Windows** Dual **$69.95**
BBD4094 **AllType** Dual **$79.00**
Requires hard disk.

International Orders: 305-443-8212 24-Hour Fax Line: 305-444-5010 **FREE FEDERAL EXPRESS SHIPPING**

Circle 259 on reader service card

© 1992 TigerSoftware, 800 Douglas Entrance, Suite 765
Coral Gables, Florida 33134

Modify And Convert Your Adobe, Agfa, Bitstream, HP And Other Fonts!

The Fast, Easy Typeface Enhancement Program For Windows!

REVIEWER'S NOTEBOOK: *If you're into desktop publishing, or work extensively with a word processor, chances are you've got all kinds of fonts that you've purchased from different sources. Here at Tiger, we've got hundreds of fonts from different manufacturers: dozens of Agfa Compugraphic fonts, a slew of Adobe fonts, scores from Digital Typeface Corp., Nimbus Q and of course True Type. Then we've got some Bitstream fonts and some others that we never use for one reason or another. We've got quite a library, but we've also got a problem: these fonts are all in different formats. There's PostScript Type 1 (Adobe, Digital), PostScript Type 3 (Bitstream Fontware), and Intellifonts (HP and Agfa). FontMonger is the answer. It allows us to convert all of our various-format fonts in either direction to any other format! Our readers have been clamoring for just such a capability — now it's here.*

But that's just the beginning our our love for this amazing new product. FontMonger also allows us to actually modify existing typefaces to produce an unlimited array of customized new faces for use in virtually any publishing or graphics application. How about this: You'll have access to unencoded characters (some of which we never knew existed) and have the unique ability to produce custom small caps and oblique characters, superscript and subscript characters, along with bar and slash fractions. Business users will love FontMonger's ability to create frequently used fractions or superior numbers (like pricing) and place them directly into a font. Take a regular typeface and instantly transform it into an oblique face or true small caps of any slant or size. FontMonger is one of the most useful — and fun — typographic tools we've ever seen, a must for type aficionados.

The Windows 3.1 Type Dilemma

With the introduction of Microsoft Windows 3.1, users will be introduced to full-scale use of True Type. True Type's debut came in Apple's System 7. Today, as PostScript and True Type become the leading page and type description languages, many other type formats are left in the dust. That's why FontMonger is such an important product. It protects your investment in fonts by allowing complete conversion of anything you've got — to any other format. These converted fonts can be exported in Encapsulated PostScript (EPS) or Adobe Illustrator file formats, as well as Windows Metafile, so outlines can be modified in CorelDraw, Micrographx designer and a host of other graphics applications. Graphics and type can then be combined and merged back into a font.

Conversions are fast and simple, just select the typeface and click on the format you want it converted to — FontMonger does the rest. That's it. And the typefaces produced by FontMonger are compatible with all applications that run under Windows 3.0 or 3.1, as well as Adobe Type Manager, Intellifont for Windows, CorelDraw, ZSoft SoftType, GeoWorks Ensemble — even the Macintosh, NeXT and PenPoint operating systems. How's that for versatility?

FontMonger was developed by a group of experienced typographic specialists who saw the vast incompatibilities between type formats, and who were themselves frustrated by the inability to use some of their fonts in many of their applications. They set out to create a conversion that would allow any type to be used anywhere. For the record, you can convert (in either direction) fonts by Adobe, Agfa Compugraphic, Bitstream, Casady & Greene, Digital Typeface Corp, Hewlett-Packard, Image Club, Linotype-Hell, Monotype, Nimbus Q, True Type, URW and ZSoft.

Customize Like Crazy!

...Combine characters from various type families into a single font! Have instant access to frequently used characters right from the keyboard! Create customized small cap and oblique characters to your exact specifications — you select the height and width proportions and the degree of slant! Want more? Create inferior and superior characters for mathematical and scientific formulas, advertisements, pricing guides and dozens of other specific uses. Every custom character you create can be installed quickly into a font.

With FontMonger, you have complete control of your type to open a world of creative possibilities.

Questions, Anyone?...

Why convert fonts?

With the forthcoming release of Windows 3.1 from Microsoft, users will have the option of working with TrueType fonts directly in their operating system. Instead of having to purchase new fonts to work with TrueType-supported applications, FontMonger lets you simply convert your existing type library into TrueType format.

Why FontMonger?

PC users who are word processing, desktop publishing and presentation applications can benefit from FontMonger's unique ability to mix typefaces within a single font. In addition, fractions can be generated in a specific typeface and installed directly into your keyboard. The numerator and denominator can be separated by either a horizontal line (en fraction) or a slanted line (em fraction).

What are inferior and superior characters?

Superior and inferior characters are smaller characters above and below the normal character baseline. For example, in the price $99.^{95} the .95 consists of superiors. Or, in the chemical formula H_2O, the 2 is an inferior. FontMonger enables you to create composite characters containing both superior and inferior elements. Composite characters become one key position within a font.

My page layout program already creates small caps. Do I need FontMonger?

Most page layout programs substitute a smaller point size for small caps. This is typographically incorrect, since the width and height of the character should be scaled in different proportions. FontMonger automatically modifies the height and width to create a typographically correct small cap. If you want to create unique small caps, simply specify the height and width proportions. FontMonger does the rest.

Does FontMonger do any other type modifications?

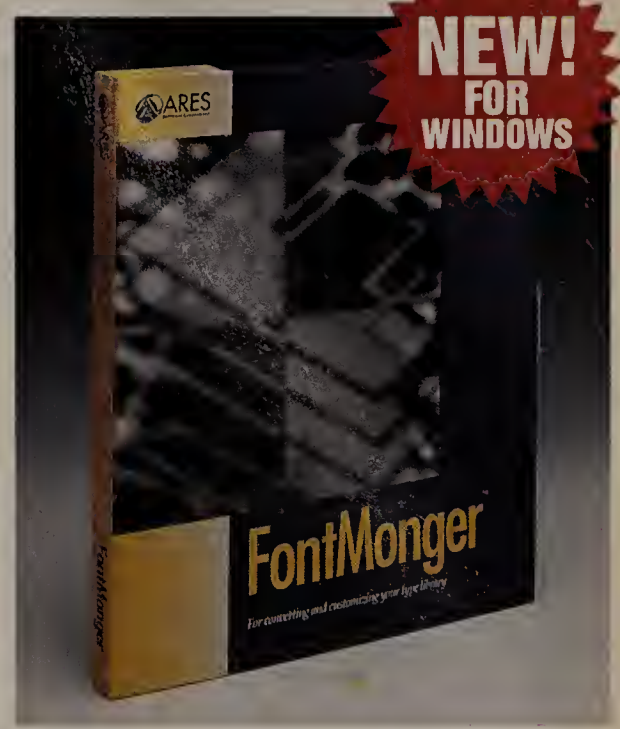
FontMonger lets you generate true oblique or slanted characters. Simply set the degree of slant and direction of slant. FontMonger provides an immediate visual sample of the character. The degree of slant can be set in degrees and retained for future use as a preference setting.

What are unencoded characters?

Unencoded characters are extra characters forming part of the original design of the typeface which are not always accessible from the keyboard. Typical unencoded characters include ligatures, fractions, international character accents, punctuation and currency symbols.

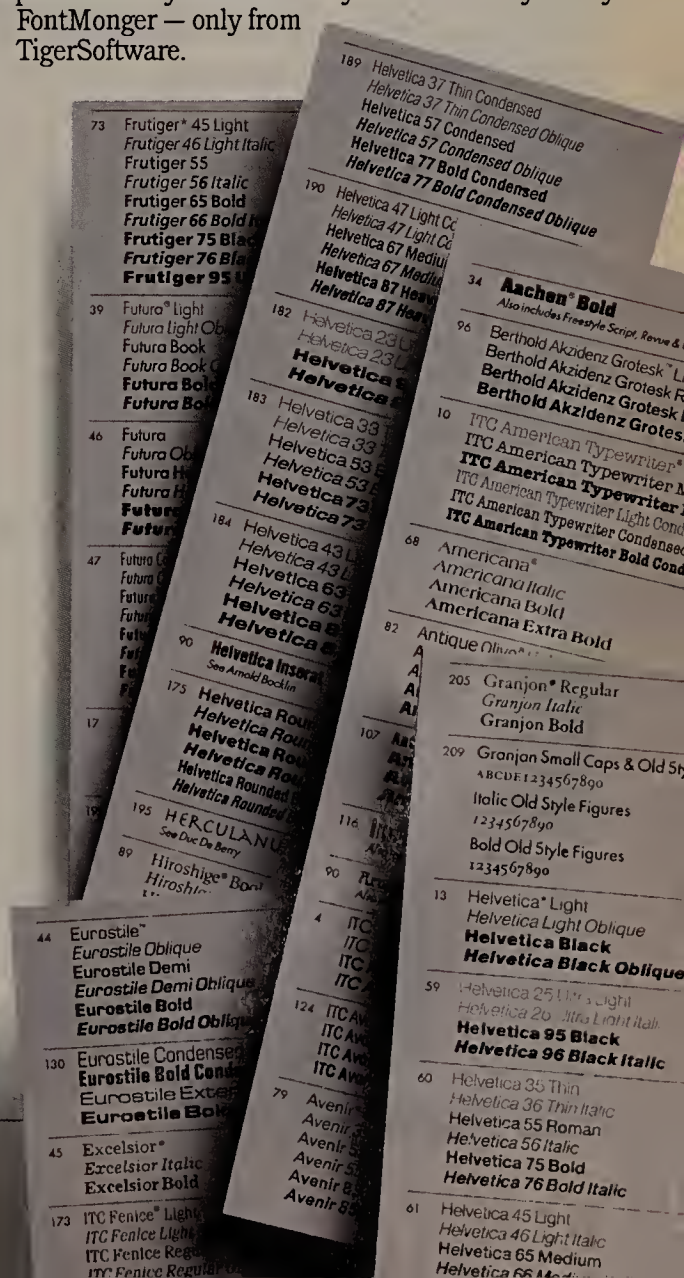
FONTMONGER WINDOWS

BBD4083 **FontMonger Windows** **$99.95**



FREE TYPE BOOK! WHEN YOU BUY FONTMONGER

This handy 12-page guide is packed with tips, techniques and jargon. Prepared by typographers at TigerSoftware, this book fills in all the gaps when working with type. It's call "A Short Course on Working with Type," and it's probably the most informative, concise volume on the subject of type ever printed. It's yours absolutley FREE when you buy FontMonger — only from TigerSoftware.



TIGERSOFTWARE To Order Call Toll-Free: **1-800-888-4437**

Circle 259 on reader service card

© 1992 TigerSoftware, 800 Douglas Entrance, Suite 765
Coral Gables, Florida 33134

Logitech Introduces Revolutionary, New Imaging Technology. Scans TWICE The Area Of A Flatbed Scanner!

Seamlessly Assembles Multiple Scans Into Large Single Images. Outperforms Flatbed Scanners.

When we first introduced the ScanMan 256 Grayscale hand scanner last year, it met with a roar of enthusiasm. We published the results of our testing — unbelievably sharp scans, with crisp, rich detail and 256 levels of gray. Scanning photos, illustrations — and text — was instantly taken to a new level. In head to head testing, we found the Logitech ScanMan 256 to be more versatile, faster and capable of producing large crystal-clear images. The 256 levels of gray add more depth and realism to all your scanned images.

Logitech had created the ultimate hand scanner, the hottest new product of the year.

But when you work with Logitech, you come to understand that they never sit still. While the ScanMan 256 was sweeping the industry (*PC Magazine's* "Editor's Choice," *InfoWorld's* 1991 "Product of the Year," *PC Computing's* "Most Valuable Product of 1991"), they were at work designing an enhancement that would catapult it to another level entirely — a completely new category of scanners. The innovation: Virtual Page Scanning. The Technology: the Logitech Autostitching feature. It automatically "stiches" 2, 3, — even 4 scans together (so it can handle TWICE the area of an 8.5 by 11 flatbed scanner!). No other scanner we've ever seen can automatically merge scans into one completely seamless image. We scanned dozens of photos, large illustrations, 11″×17″ posters — each one was perfectly seamed. The ScanMan 256 smooths and de-skews the stitch, while evening the tones across the scans for remarkable images. Scan left to right, top to bottom — any way you like, the powerful ScanMan 256 software takes care of the rest.

The ScanMan 256 is constructed with the highest-quality materials. Of course it features the same "red-beam" technology that produces 7 times more light than conventional technologies, so more information is captured by the scanner, producing professional-quality scans in seconds.

Scan large photos or illustrations — up to 16 inches wide by 22 inches long — the largest scanning-area possible for any desktop scanner. It's fast and easy to use, with the superior engineering and design that goes into every Logitech device. The ScanMan 256 is the smart choice in scanning, replacing the bulky flatbeds, delivering unequalled depth, sharpness and clarity. There's really no reason to even consider any other scanner.

In addition to the ScanMan 256, you get a copy of the FotoTouch Image Editing System, which acts as the host application for the ScanMan 256. Scanned images are automatically transfered directly to FotoTouch for immediate editing, with your choice of great new tools and effects. You'll perform advanced, 256 gray scale editing and allows you to print your images with amazing results on any dot-matrix and laser printers as well as Linotronic typesetters and other professional equipment.

As scanning text becomes more important in business, ScanMan 256 provides Perceive, one of the industry's highest-rated OCR software. The 256 grayscale support means text of any size, with any background color or pattern will be captured with precise accuracy. Perceive allows fast, easy capture of text at virtually any size — it's heavy duty OCR!

LOGITECH

BBD2594 **ScanMan 256/Perceive** **$279.00**
Call for requirements.

Amazing Scans! Scan an area twice the size of even flatbed scanners!

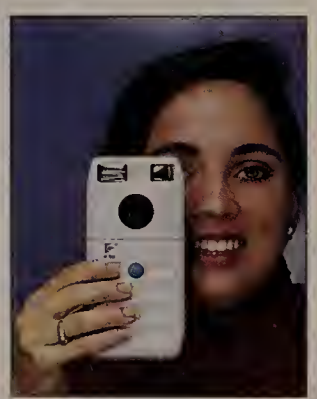
Includes FotoTouch image retouching software. Modify your digital photos with a wide array of special effects and specialized enhancement tools.

Instant Digital Snapshots!

Introducing The Incredible New Logitech FotoMan...

REVIEWER'S NOTEBOOK: *What is it? In short, it's a portable, digital camera — for your computer. FotoMan takes great pictures with amazing clarity and 256 grayscale richness — then allows you to instantly download them to your PC. It includes a slew of image editing tools that open a world of creative opportunity, and is compatible with virtually all desktop publishing programs. The applications for this new technology are enormous. Insurance and real estate professionals are using it to expidite claims and transmit photographs of neighborhoods and homes. Manufacturers use FotoMan to quickly catalog products and parts, while law enforcement officials are using it to photograph suspects, crime scenes and evidence — without the time and expense of film, processing and prints. Digital images are instantly captured and merged into documents, or stored as a permenant record. Up to 32 images can be shot and stored on the FotoMan's RAM chip, then transfered via serial port to FotoTouch — or previewed on your screen.*

There are hundreds of practical uses for this new product, but we found FotoMan was a lot of fun. Fast and easy, it comes with an automatic flash, one-button operation and a field of focus from three feet to infinity. Includes FotoTouch for image editing, including 256 grayscale editing.



One of the hottest new ideas in computing: the digital photograph — taken by a small, portable and easy to use camera that allows instant transfer to your computer — without a digitizing board or any other hardware.

In the past, getting a photograph into your PC meant using a traditional film method. The film would first be processed into either slides or prints then scanned or stripped into your document. Now, just snap a photo of a new employee, for example, and send it directly to the corporate database. Once you've got your shot on-screen, the FotoTouch software allows you to easily make modifications. Then save your image in either TIFF, CCIT, BMP, PCX or EPS format. There's no film, no developing and no waiting!

Real Estate professionals can send pictures of homes to prospective buyers, editing out undesirable objects like garbage cans. Or images can be put together — like different shots of landscaping to create a custom layout. FotoMan and FotoTouch are like having a complete darkroom in your PC. The possiblities are endless.

Us FotoMan images for multimedia and presentations. Produce personalized stationery, letters, invitations and anything else where you want to add real-life images to your computer documents.

It portable! FotoMan packs all its power in a rugged unit that's small, lightweight and battery-operated, so you can take pictures anywhere.

Take pictures indoors and outdoors — Fotoman includes a built-in flash for indoor use and a neutral density filter for perfect use outdoors, too.

LOGITECH

BBD2592 **FotoMan** **$599.00**
Call for requirements.

Circle 259 on reader service card

Mon.-Fri. 8AM-10PM, Sat. 8:30 AM-8:00PM & Sun. 11AM-5PM (EST).
Or, use our 24-hour fax line: (305) 444-5010.

1-800-888-4437

Stop Hard Disk Death! (Even After It's Too Late)

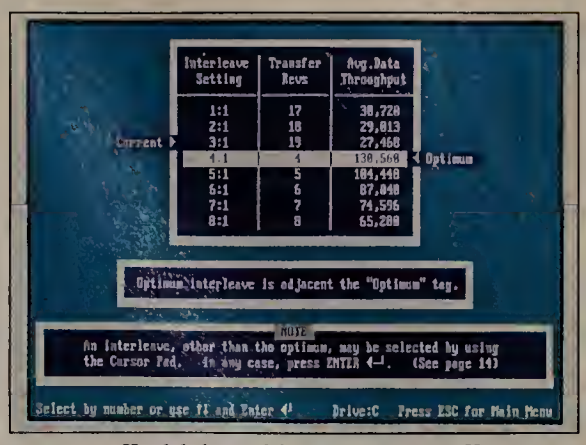
REVIEWER'S NOTEBOOK: *It's plain and simple: If you have a hard disk, you absolutely must have and use SpinRite II. You don't need to know how your hard disk works (although it will teach you if you like). You don't need to know why DOS just gave you a hard disk error, or why DOS says it can't find your valuable data. All you need to know is your hard disk is like everything else in this universe; it won't last forever. But don't despair; there is something you can do about it. With a little easy maintenance you can make your hard disk last longer, run faster, and run more reliably. Think of a hard disk as a car. Proper maintenance can make a car last indefinitely, and a little fine tuning makes it run so much better. Proper maintenance will do that for your hard disk too. SpinRite is the original in its class, and this all-new SpinRite II is still the world's finest.*

Byte Magazine summed it up best when they wrote, "SpinRite is what the word MUST was invented for." This vital maintenance software will give you years of extra hard disk life. It will recover your valuable data even after DOS says it can't be found. It will make your hard disk faster (400 to 500% increases have been reported). And best of all, SpinRite II will do all this automatically and easily.

The user interface and easy-to-read manual are the best in the industry. Not because they're huge, scholarly volumes of intricate details (they're not), but because they're easy to follow, written in plain English, and the manual is just the right size to read and use. It's quite a relief to finally get your hands on a computer manual you can really understand and put to good use. And that's the overall theme of SpinRite II: easy-to-use. When you couple that with the fact that SpinRite is the world's first and foremost product of its kind, you get an unbeatable combination dedicated to not only the prevention of premature hard disk death, but its miraculous resurrection even after it's 6 feet under.

Hasn't Been Done Since It Left The Factory!

That's right. The most important information on your hard disk hasn't been renewed or changed since it left the factory. What information is that? It's the most vital of all, the identification addresses necessary for finding data on your hard disk. And since information on a hard disk is basically written with magnetized "holes," the magnetic properties can wear and lessen with age. What's more, the mechanical motions of a hard disk over the years (a hard disk continually spins at 3600 rpm) will cause the alignment of the mechanical parts to shift, thereby causing additional problems finding your valuable data. This ends up with a message from DOS saying your data can't be found. (Horrors!)



Hard disk error? Leave it to SpinRite II...

How does SpinRite handle that? It actually rewrites all the original information on the hard disk, including the vital identification addresses. This alone adds years to the life of your hard disk, and all by itself would well be worth the price of SpinRite (but SpinRite does so much more). As a better-than-new bonus, SpinRite rewrites that data in such a way that the hard disk is actually faster than when it left the factory — as much as 500% faster!

Perhaps you're wondering what happens to your data while SpinRite does all this. It might appear that you need to backup your hard disk before SpinRite can "start from scratch." Worry not, because that's the best part. SpinRite does everything without loosing your data! It's so automatic, you can start the process, go to lunch, and come back to a hard disk that's better than brand new condition.

SPINRITE II

BBD3285 **SpinRite II** **$79.95**
Requires DOS 2.1 or above.

THE CD-ROM SUPERSTORE

If you've got a CD-ROM reader, here's a brand new collection of incredible new titles that will make your library more enjoyable—and more useful. Choose from art, business, news and late-breaking shareware...

Quick Art Deluxe. Packed with over 3000 top quality images for use with your PC in TIFF and IMG formats. The ultimate desktop publishing art source — in fact, it's the only art collection you'll ever need! Choose from animals, borders, energy, food, holidays, maps, occupations, people, science, sports — hundreds more!

Trade Opportunities. A great business disc! The need for products and services in the international marketplace is exploding — this disc is full of information on how you can take your place in the new global economy. Includes Department of Commerce Trade Opprotunities Program (TOP) and Commerce Business Daily (CBD). Also includes External Affairs and International Trade Canada 1991 Companies for World Markets as well as a complete section on how to sell to international markets and a helpful information reference guide. Covers qualification process, bidding procedures and techniques, statistics contacts and much more.

The Wazata World Factbook 1991. Just released! The Wazata World Factbook 1991, based on the CIA World Factbook, is often called the "World Almanac of the Federal Government." This annual publication is jam-packed with extensive examinations of territories, countries, protectorates and disputed land claims worldwide and is the most complete listing of its kind available today. Includes socio-economic, geo-political, demographic and other country-specific data.

The Washington Times And Insight On The News. The ultimate news reference library on a single CD! Combines the respected journalistic heritage of The Washington Post with the lively weekly coverage of Insight on the News. Total coverage includes events, reports and analysis of topics from January 1990 to June 1991.

Newsbytes International Computing Industry News. The complete archives of the Newsbytes News Network from May 1983 to August 1991. Topics include telecommunications, computing trends, general computing news, government and special articles on IBM, Apple and UNIX.

Night Owl's. All new! Preview over 10,000 of the industry's top software applications. See how they work and if they're right for your needs — before you buy! Includes hot-selling communications, desktop applications, games, development tools, and more — over 600 Mb!

CD-ROM DISCS

BBD9500 **QuickArt Del.** ... **$199.00**
BBD9501 **Trade Opportunities Int'l & Dom.** **$199.00**
BBD9502 **Wayzata World Factbook 1991** ... **$35.00**
BBD9503 **Wash. Times & Insight on the News** **$99.00**
BBD9504 **Newsbytes: 5-83 to 8-91** **$85.00**
BBD9505 **FPN 1991 (1-91 to 12-91)** ... **$99.00**
BBD9506 **Night Owl's 1-90 to 10-91 PC** . **$95.00**
BBD9507 **Windows Shareware Gold 3.1** **$120.00**

A Railroad On Your Desktop!

It's the most fun I've had on my PC in years! Creating my own railroad line right on my screen — then create my own collection of customized cars! You design the track layout, using special tools that keep curves aligned and precise. You can design tracks of any configuration, including figure-8's and track switches.

And when the track is done, landscape the scene with buildings, trees, rivers, roads, bridges and more. Just select from the graphical menu bar as you design. There's also a complete set of drawing tools to create any type of layout, object or building. Design Your Own Railroad also includes an assortment of sample track layouts to get you going. Then build the ultimate train set! Choose from dozens of classic cars, modify them, colorize them, add logos, designs and more. Then put your design to the test... delivering goods and collecting the revenues.

Design Your Own Railroad

BBD3790 **Railroad** **$49.95**
IBM PC XT, AT, PS/2 or compatibles; DOS 2.0 or later; 512K RAM.

Your Dream House.

Go ahead — design that new addition to your home! Put your imagination to work on the interior, then plan the perfect landscape. Experiment with different layouts, colors, shapes and arrangements using the Design Your Own Home Series. It's fast, easy and fun — the results are clean, precise and professional. These three simple-to-use computer aided design systems include dozens of sample floorplans, pre-drawn furnishings, plants, flowers, trees and shrubs. Modify them to suit your taste, or start from scratch to create just the environment you've been dreaming of. Enough power for professional use.

BUY ALL 3 – SAVE $30!

Design Your Own Series

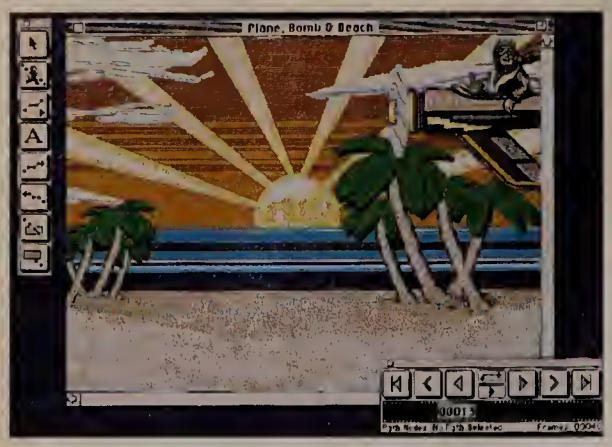
BBD3001 **Architecture** 5¼" . **$49.95**
BBD3002 **Interiors** 5¼" **$69.95**
BBD3003 **Landscape** 5¼" ... **$69.95**
Requires 1MB or more; mouse, ImageWriter, LaserWriter. ***Macintosh versions available.***

International Orders: 305-443-8212 | 24-Hour Fax Line: 305-444-5010 | **FREE FEDERAL EXPRESS SHIPPING**

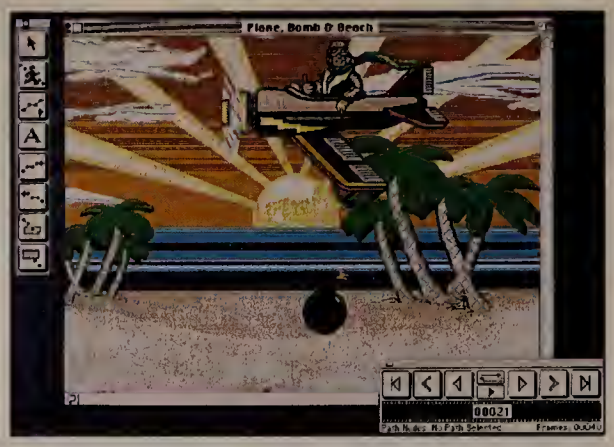
Circle 259 on reader service card

© 1992 TigerSoftware, 800 Douglas Entrance, Suite 765
Coral Gables, Florida 33134

Create captivating presentations and movies just like the pros — in 3 easy steps.



First create a background in Animation Works or your favorite paint program. Next create the "actors" the same, easy way.



Finally, put it all together with point and click ease. Use hundreds of special effects and sound for state-of-the-art shows!

The Desktop Movie Studio!...

Create Fully Animated Scenes In Just A Few Minutes...

REVIEWER'S NOTEBOOK: *This remarkable product allows you to animate — by just drawing lines; in effect, telling the system where to move the objects and how fast. That's it. Quickly defining what the objects, "actors" and backgrounds will look like. Animation Works allows you to create colorful movies for sales presentations, demonstrations, storyboards, video titling and production. It's easy enough for inexperienced users, yet has all the power and features for graphic designers, creative directors and video producers. They love how easy it is too. Great training and educational tool. To create a sequence illustrating how a piston works or how a bird achieves flight would take about twenty minutes. Just draw lines to show Animation Works the path...*

Animation is high-impact communication. The ability to deliver messages to an audience, student or prospect with animated sequences along with sound and text is dynamic. Animation Works makes it simple; that's why it's become one of the most popular PC multi-media products in the business. The concept of "path-based" animation makes moving an object as easy as drawing a line across the screen. Establish different paths for each object in your scene, or attach the motion of one object to that of another, for complex sequences. Animate text to create titles, scrolling credits and feature lists. Quickly add customizable wipes, fades and other intriguing transitions between scenes. Animated mattes allow you to enclose action within a shape for incredible video-like effects. Adding backgrounds, sound, special effects, color and mattes are a mouse click...

The Color Cycling capabilities allow your imagination to explode with animated color effects, giving you four independent color cycle ranges.

The sequence of three frames you see on this page have been taken from 25 frames that make up the entire animated sequence. Here's how we did it: We first assembled our background (we created the scene in Animation Works, but we could have done it in a paint program), using a variety of shapes, patterns colors and textures. The Film Player you see in the lower right-hand corner of the screen tells us which frame in our movie that we're currently editing.

Animation Works is an innovative new program to create animated sequences — but don't be intimidated! It's easy! You can create your own animations right out of the box! It's one of the most enjoyable products we've seen in years!

ANIMATION WORKS

BBD2702 **Animation Works** **$120.00**

Don't Buy Another Printer—Share The One You Have!

REVIEWER'S NOTEBOOK: *The Kansai Printer Sharers eliminate the need for new printers. If you're already sharing printers, you know the time-consuming task of switching cables is not the answer. Manual switches make life a little easier, but are infamous for introducing static interference and noise that can distort printing (and void your printer warranty). Only the Kansai Printer Sharers allow seamless connection of two or four PCs to every printer. This thing is a tiny miracle, just 4.5 inches square with the ability to eliminate interference that plagues other methods. Simple to install, just plug your cables in, turn everything on and you're ready to print from two or four PCs.*

Once installed, the Kansai Printer Sharer directs traffic to the printer, actually sensing when one of the computers is about to send data and immediately connects that computer to your printer. During that printing session, the other computers are locked out automatically, keeping data safe.

And since the printer sharers are electronic, they won't void your printer warranty like a mechanical switch can. When your computers have documents to send to the printer, the Kansai Printer Sharer prints them on a first-come-first-serve basis. When the printer finishes the first job, it automatically checks for more data for 15 or 30 seconds (your choice), then another PC takes over automatically. There are convenient status lights that allow you to monitor the progress of the print jobs, and which PC is currently accessing the printer. On-line indicators for each port help you monitor activity at a glance.

You have complete control of your printer with automatic prioritized switching and the small footprint saves desktop or print-station space. Effectively cuts your printer costs, without loss of productivity or risk to data. Our testing yielded 100% reliability.

Features:

Connect two or four PCs to every printer; convenient on-line indicators for each input port; automatic prioritized switching gives you complete control; electronic design eliminates interference and small footprint design saves space.

Specifications:

No. of Ports:	2 or 4 input ports, 1 output port
Interface:	Centronics Parallel
Switching method:	Automatic prioritization by print request sensation
Switching wait time:	15 seconds or 30 seconds
Indicators:	Power Port Selected
Power Supply:	5V DC, 400mA with constant voltage regulator
Dimensions:	4½″×4½″×1¼″

KANSAI

BBD6700 **2-Port Printer Sharing Device** ... **$99.00**
BBD6702 **4-Port Printer Sharing Device** .. **$149.95**

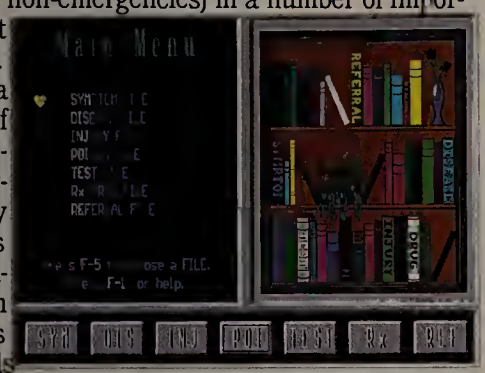
Mon.-Fri. 8AM-10PM, Sat. 8:30 AM-8:00PM & Sun. 11AM-5PM (EST).
Or, use our 24-hour fax line: (305) 444-5010.

1-800-888-4437

A Complete Medical Advisor For Your PC!

Do you know how to tell if your child has chicken pox, the mumps or a more serious condition? Do you know what to do if your child accidentally ingests a household cleaner? Do you know what to do in the event of a scuba injury? Your family's health is your responsibility. If an accident occurs, every minute counts — you need to know instantly what to do, and what not to do.

Schueler's Home Medical Advisor is an easy to use, interactive home medical reference system that can answer your medical questions (for both emergencies and non-emergencies) in a number of important categories. Created by a team of Board Certified Emergency Physicians in collaboration with graphics professionals and technicians, The Home Medical Advisor covers all age groups. It is colorful, informative and fast, putting volumes of medical and health information in a fast-access format. All information is easy to understand and emergency instructions are clear and concise.



The Symptom File. From The Home Medical Advisor's Main Menu select Symptom File and view a list of the most common symptom complaints by patients. This file will quickly formulate up to 400 potential diagnoses, employing over 1400 questions and 600 color VGA illustrations (the graphics are incredible!). The Symptom File includes a listing of 70 of the most common chief complaints, often the worst, or most bothersome symptom. Home Medical Advisor will ask key questions and arrive at possible diagnosis from its vast knowledge base.

The Disease File. The Disease File provides extensive information on over 450 diseases with along with discussions of their causes, common symptoms, physical evaluation and treatments. There are also special sections on pediatrics and problems unique to women.

The Injury File. A listing of over 200 common injuries and treatments. Everything from gunshot wounds, burns, cuts and bruises to acute mountain sickness and broken bones is indexed by body part for fast reference.

The Test File. Diagnostics have advanced by leaps and bounds over the past several years. The Home Medical Advisor's Test File provides a listing of over 140 of the most widely used medical tests. Each section explains exactly how each test is performed, why it is used, its limitations, risks and benefits. Includes a special section on "What to expect."

The Drug File. The list of pharmaceutical agents grows longer every year. The Home Medical Advisor includes a listing of over 600 medications (prescription and nonprescription) with exhaustive information on their uses, potential side effects and drug interactions.

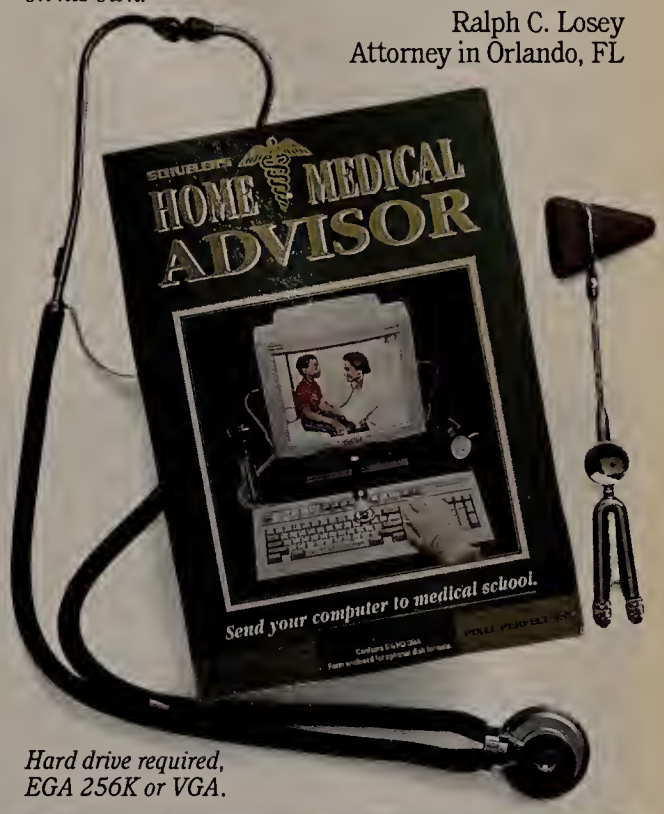
The Poison File. An important section for households with small children. Although many poisons today are supplied in child-proof containers, accidents can happen. The Poison File contains a list of over 500 poisonings and exposures. This file will tell you exactly what to do and who to see for a variety of plant, medicinal and household ingestions.

The Referral File. When you register your copy of Home Medical Advisor, you'll be eligible to receive a listing of Board Certified physicians, hospitals and specialty clinics in your area. Registered users will be eligible for updates (every 10-12 months).

Complete and easy to understand, this is one of the most important NEW titles on the market today.

"The program was interesting and detailed enough to fascinate me, yet easy enough for my 8 year old to run on his own."

Ralph C. Losey
Attorney in Orlando, FL



Hard drive required, EGA 256K or VGA.

Home Medical Advisor

BBD3860 **Home Medical Advisor** 5¼" **$69.95**

Premium Quality Memory Upgrades At Shockingly Modest Prices!

If you use a computer, you know the benefit of more memory. With a few more megabytes of memory you not only load it, you see it snap and pop onscreen with lighting speed.

We're proud to present the highest quality, most reliable memory available. Offered directly from the manufacturer, Z-COM Micro Electronics, you get top quality for practically wholesale prices.

Can You Do It?

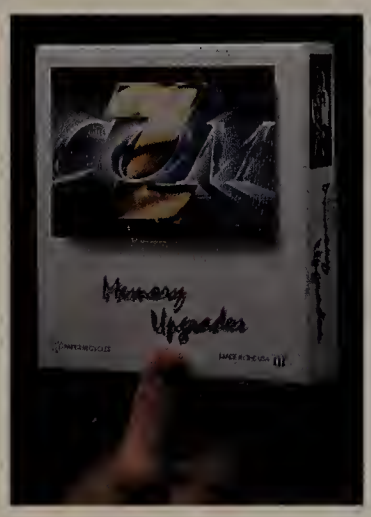
Think adding memory is over your head? It's not so hard really. Your computer manual will tell you what kind of memory chips you need. And it will even show you a picture of where to plug them in.

For PCs and all compatibles, we offer three sizes of SIMMs, which stands for Single Inline Memory Module. A SIMM is a small board with memory chips on it. You simply plug the board inside your computer. Very easy to install. Each SIMM comes in either 256KB, 1MB, or 4MB size, to fit the right size your computer needs. And these chips are fast! Most others sell 100ns (nano-second) chips. But our 256KB SIMM has 80ns chips, and 1MB and 4MB SIMMs have 70ns chips. That's fast! You'll get quicker calculations and eye-popping graphics.

Laser Printers.

Ever tried to print a full page of graphics on your stock laser printer? If so, all you ended up with is a half-drawn image. Stock laser printers just don't have enough memory to complete a full page. But the solution is simple. A memory card you slip into the side upgrades your printer for full page graphics and all the fonts you could ever want. There are additional sizes available.

Z-COM has been producing memory upgrade



products for the past six years and manufactures standard as well as proprietary memory upgrade products for Apple, AST, AT&T, Canon, Compaq, Epson, Everex, Hewlett Packard, IBM, NCR, Okidata, Panasonic, Sharp, Sun, Texas Instruments, Toshiba and Zenith computers, workstations, and laser printers. Z-COM currently manufactures memory upgrade products for over 20 manufacturers and currently has over 200 line items.

Z-COM designs, assembles, tests, and packages their memory upgrade products. With a multi-million-dollar assembly facility, including a Class-100,000 Clean Room. All Z-COM products are manufactured using the highest quality equipment under the tightest tolerances and the strictest controls. Z-COM's manufacturing process begins with having all products run through their incoming inspection process. Everything is double checked, from board tolerance and thickness, to the consistency of the solder paste. Z-COM controls the manufacturing process from the moment the ICs arrive at our facility, through the manufacturing process, up to the final packaging.

INCLUDES FREE BOOK!

When you purchase Z-Com memory, we'll include "A Very Basic Guide to Memory" from the Tiger Editors. This is a complete explanation of how memory works and how to easily upgrade.

Z-COM

BBD6430 **SIMMS 256 × 9 80ns** **$14.00**
BBD6431 **SIMMS 1 × 9 80ns** **$49.00**
BBD6432 **SIMMS 1 × 9 70ns** **$49.00**
BBD6433 **SIMMS 1 × 9 60ns** **$52.00**
BBD6434 **SIMMS 4 × 9 80ns** **$178.00**
BBD6435 **SIMMS 4 × 9 70ns** **$179.00**
BBD6436 **SIMMS 4 × 9 60ns** **$199.00**

Z-COM MEMORY UPGRADES

For AST Systems

BBD6437 **1Mb for AST Premium 386C, 386/16** **$99.00**
BBD6438 **1Mb for AST Premium II 386SX20, 386SX16, Cupid-21, AST Premium 386; 25 & 33** **$59.00**
BBD6439 **1Mb for any AST Executive Notebook** **$72.00**

For Compaq DeskPro's 4 Laptops

BBD6440 **1Mb for DeskPro 386/20e, 20, 25e & 25** **$80.00**
BBD6441 **1Mb for SLT/286** **$89.00**
BBD6442 **1Mb for Portable LTE/286** **$93.00**
BBD6443 **1Mb for Portable 368S/20** **$179.00**

For Hewlett Packard LaserJets

BBD6444 **1Mb for LaserJet II & IID** **$85.00**
BBD6445 **1Mb for LaserJet IIP, III & IIID** **$80.00**

For IBM PS/2

BBD6446 **2-14Mb Xpand w/2Mb for Models 50, 50Z, 55SX, 60, 65SX** **$267.00**

For Toshiba Laptops

BBD6447 **1Mb for Portable T1000SE, LE & XE** **$119.00**
BBD6448 **2Mb for Portable T3100SX** **$119.00**
BBD6449 **2Mb for Portable T3100E** **$119.00**
BBD6450 **2Mb for Portable T3200SX** **$119.00**
BBD6451 **2Mb for Portable T5100** **$119.00**

SIMM Modules have a 5-year warranty; all other memory at lifetime warranty. Call for additional items. 100ns RAM also available.

International Orders: 305-443-8212 24-Hour Fax Line: 305-444-5010 **FREE** FEDERAL EXPRESS **SHIPPING**

Circle 259 on reader service card

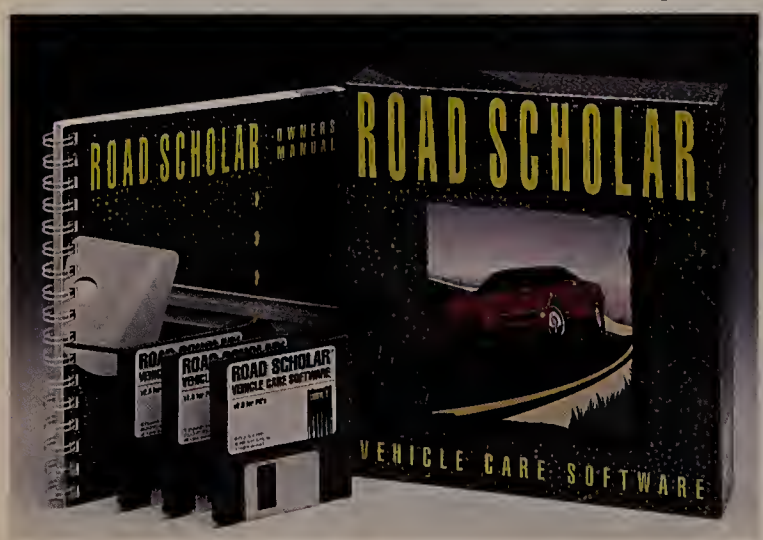
©1992 TigerSoftware, 800 Douglas Entrance, Suite 765
Coral Gables, Florida 33134

Automate Car Care with Your PC...

Introducing the World's Only Car Care Software...

REVIEWER'S NOTEBOOK: *The business of owning (or leasing) an automobile: controlling insurance costs, increasing your car's resale value, prolonging its life, paying less tax and keeping up with the details. You can make light work of your car's care and feeding with a unique new product called ROAD SCHOLAR. Let's face it, a car is a big expense and you've got to take good care of it or else you pay dearly at trade-in time. Besides keeping track of maintenance and safety issues, ROAD SCHOLAR reminds you of license and insurance renewals, inspections, warranty expirations and more. Business drivers can print accurate reports for tax deductions, tracking expenses to the penny. Miles-per-gallon and cost-per-mile figures, maintenance history, graphs and charts on vehicle performance, stores all vehicle documentation, more! Any type of vehicle: car, motor home, truck, motorcycle — even golf carts! Wouldn't it be nice to have someone remind you that you're due for an oil change? How about instant information on vehicle fluid capacities, insurance requirements or market value of an automobile, How about complete listings of phone numbers of manufacturer's representatives.*

Easy to install, fun and fast to use. ROAD SCHOLAR takes care of all the details — no more scrambling for maintenance records, insurance papers and other documentation.



An excellent tool for business drivers and auto enthusiasts. New car buyers will love to chart the miles-per-gallon and cost-per-mile performance of their new car versus that old trade in. For the IRS, ROAD SCHOLAR maintains a continuous tax record of monthly and annual Business vs. Personal mileage, tracking deductible expenses automatically. You'll get the maximum tax benefit and get concise support documentation.

Users report higher resale value, thanks to ROAD SCHOLAR's accurate historical maintenance, repair and expense information. We tracked the operating-only cost of four different types of cars: A Corvette, a Cutlass Supreme, a Mazda Miata and a SAAB 900 Turbo over a four-week period. While the Mazda was the least expensive to run over that period, we were surprised to learn that the SAAB was more expensive to operate than the Corvette.

Road Scholar handles every aspect of owning a car: Warranty, Safety, Steering & Suspension, Tires, Wheels, Brakes, Title, Tags and all Permits. It also includes a helpful warning system that helps you keep track of important

Quickly track cost-per-mile!

dates and avoid unnessesary expense and road problems. The Preventive Maintenance alert always takes a priority with Road Scholar.

Road Scholar alerts you to other important dates as well, including your Warranty expiration dates, Inspection dates, License expiration dates (including tags, title and permits). It also alerts you as to the due date of your next insurance premium and your gasoline credit card payment dates. How many times have you lost track of warranty expiration and ended up paying for work that WOULD have been covered? That will never happen with Road Scholar.

The Vehicle Inventory Information section of Road Scholar can save you money on insurance by recording things like anti-lock brakes, anti-theft alarm and passive restraints. Recording this information as it applies gives you instant access to information on eligibility for insurance premium discounts. Many of these discounts are substantial.

Whether you're an auto enthusiast or just want to get the lowest cost-per-mile, Road Scholar is the perfect tool. One of the most original new products.

ROAD SCHOLAR

BBD3345A **ROAD SCHOLAR** **$59.95**

Automatically Turn On Your PC By Modem!

REVIEWER'S NOTEBOOK: *This best-seller is a must for anyone who uses a computer on the road or at home, as well as the office. With the price of pocket-sized, very fast modems coming down, remote computing is becoming a business standard. Now you can call from any phone and turn on any remote computer (or any other equipment), without the wear and tear or maintenance cost of leaving the equipment running full time.*

With pcAnywhere, Carbon Copy, Commute or any other remote communication software you'll have total control over your remote computer. Then, when you hang up, the equipment is turned off — all remotely and automatically.

Remote Power On/Off works like this: Just connect the Remote Power On/Off unit to your office PC. Then, from your home or remote location, actually turn on the office PC and begin work. With remote communication software, you can access and use software applications, perform lightning fast data transfers, even use printers and other peripherals connected to the office PC. And here's the enormous benefit: the office PC does not have to be running 24 hours a day. You'll see significant savings in energy costs (estimates suggest that running a PC and laser printer 24 hours a day can cost an extra $50 each month) and over time, you'll reduce wear on the equipment

Network An Office In Less Than An Hour!

No Experience Required! Share Printers, Send Messages and More.

Easy Office Network makes connecting PCs as easy as plugging in a new phone.

It seems everyone wants to connect up their computers lately. Being able to share an expensive laser printer or a high-speed, costly modem is a big money-saver. Not to mention the increased productivity gained by sending electronic messages between PCs. Then there's the advantage of quickly and easily transferring files. (What's worse than having to transfer a file too large to fit on a disk?)

Reap the benefits of networked computers without the little-known hassles. Expensive networks like Novell require expert (read in "high-paid") technicians to do the simplest of everyday tasks. And big networks require special versions of your existing software. (That's a big hidden cost — new WordPerfects, 1-2-3s, etc.) You could spend thousands of dollars to connect just a handful of PCs.

But with Easy Office Network, there's nothing extra to buy. Everything you need — cables, connectors, etc. — comes complete in one easy-to-use package. Anyone can quickly install Easy Office Network. It's as simple as plugging in a telephone. (In fact, they use the same kind of wire and plug.) After one fast, initial installation, Easy Office takes care of itself with no further attention from you. You'll be reaping the benefits of networking — without the hassles!

- **Share Serial and Parallel Printers with Disk Spooling.**
- **Share Expensive Modems.**
- **Send Messages Between PCs.**
- **Run Remote Applications.**
- **Transfer Files Between PCs.**

When you throw in password security, file locking, and a host of other features, Easy Office Network

becomes a vital business solution.

Start with the 4-PC or 8-PC kit, then add on when the need arrives. Multiple Easy Office Networks easily link together to support 16, 24 or 32 PCs. And don't worry about memory — Easy Office Network uses only a scant 48k.

All you do is plug the Easy Office Network connector into the serial port (which every PC has), and run the simple installation program. No boards or other hardware to install. No expansion slots taken up, and no conflicts with other boards. This product really lives up to its name: Easy.

SERVER TECHNOLOGY

BBD6300 **Remote Power On/Off** **$149.95**
BBD6301A **Easy Office for 4 PCs** **$399.95**
BBD6301B **Easy Office for 8 PCs** **$495.00**
BBD6301C **Upgrade from 4 to 8 PCs** **$229.00**

Remote On/Off: *IBM PC, XT, AT and compatibles with 256K RAM.*
Easy Office Network: *Requires 1 serial port for each PC.*

Mon.-Fri. 8AM-10PM, Sat. 8:30 AM-8:00PM & Sun. 11AM-5PM (EST).
Or, use our 24-hour fax line: (305) 444-5010.

1-800-888-4437

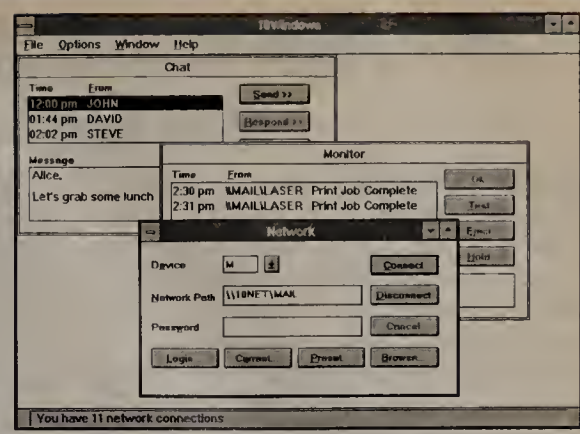
The Fastest, Easiest Windows Networking...

Share Files, Printers, Data And Applications (Inexpensively!)

REVIEWER'S NOTEBOOK: *Do you run Windows and need a way to share files, printers and keep your applications and pool of data just a keystroke away? You need a network. But finding the right network and investing in the technology you really need is a muddy issue — especially under Windows. That's why 10NET LAN has skyrocketed into poularity with small businesses, medium-size-but-growing businesses and departments within large corporations. Since 10NET LAN is peer-to-peer, no server is required — and you buy just the connections you'll use today, and add on as you need in the future. And 10NET LAN adheres strictly to the highest industry standards of compatibility, reliability and interoperability. It's a fast, easy network that gets you going in about ten minutes. Just plug the network adapters of your choice into your computers, run easy-to-install cables between them, insert a 10NET diskette and type install. That's it. Your computers are connected and you can run all of your applications exactly the way you used to. Only now you have access to all the resources anywhere on the network. Everyone connected gets more done — and they don't have to change the way they work. 10NET LAN is a speedster, with higher throughput rates than Lantastic 4.0 and NetWare Lite 1.0 in PC Magazine Benchmark tests. Highly compatible, highly flexible. Great LAN solution. 1-, 3-, and 10-node packs available.*

This product holds the answer to costly, inflexible networks. 10NET LAN makes greatest possible use of your network — and your computers. Zippy throughput and instant access are the trademarks of this program, and it is the most compatible we've seen. Standards-based, 10NET LAN gives you high levels of reliability and expandability, far beyond any product on the market today — without the need for a dedicated server. 10NET LAN supports the SMB protocol, developed by Microsoft, IBM and 3COM, and provides full interoperability with SMB-based LANs such as Microsoft LAN Manager and IBM LAN Server. 10NET LAN is not an off-the-wall attempt at connecting computers; it has been developed according to industry standards.

The issue of expandability is critical. Without the ability to quickly add members to your network, you could be headed for major problems down the road. 10NET offers expansion kits by as many nodes as you need, and supports Ethernet (thin, thick and 10BASE-T), Arcnet and Token Ring. Don't worry — 10NET LAN will easily work with your existing PCs, peripherals and software. This flexible architecture means that you'll never be out of touch with emerging standards and new versions.



PRINTER RESOURCES: 10NET LAN gives you more ways to use your printer — without making anyone wait! Advanced print sharing (spooling) technology is built into 10NET LAN that allows you to keep on working while you print. Share printers between several users, without costly bottlenecks. Prioritize "hot" print jobs and print them first. This feature alone is worth the price of 10NET LAN. Printer tie-ups are one of the most aggravating side effects. 10NET LAN ends those problems forever.

NO SECURITY RISKS: Networks must have a definitive security system. 10NET LAN's security options protect sensitive data from unauthorized access with a strategy so complete, it's in use at many government agencies today. Choose from a full menu of security options for complete customization.

10WINDOWS for 10NET (provided free with 10NET 5.0) provides access to network functions from within Windows.

10NET LAN

BBD3280A **10NET LAN** 1-node pack* **$85.00**
BBD3280B **10NET LAN** 3-node pack **$199.00**
BBD3280C **10NET LAN** 10-node pack **$525.00**
**1-Node Pack requires a 3- or 10-Node Pack for complete software and documentation.*

Simple, Intuitive Contact, Time, Client and Communication Tracking.

REVIEWER'S NOTEBOOK: *A must for businesspeople who need to track dozens of commitments, outside contacts and opportunities. Provides fast, easy sales and marketing information management. As information changes and grows, the SuperOffice database is updated, allowing instant access to all kinds of useful combinations, perfect for the rigors of this environment. Excellent reporting, a great set of tools for easy customer/client management, comprehensive customer tracking, direct mail demystification, telemarketing tracking, lead management (how many of those do you burn?), sales forecasting and much more. In-depth contact management and follow-up tools.*

"The Information Law" states that knowledge must be accessible to everyone — including the managers and executives that are responsible for the company's success. If not, then "Murphy's Law" automatically kicks in and you could be headed for trouble. Managers and executives require a unique set of figures, indicators and reports. They need raw power behind their information and contact management efforts. While computers are used for a variety of "back-office" tasks; word processing, accounting, orders, billing and payroll, they sometimes hold information about customers, markets and trends hostage. SuperOffice is the first product we've seen that combines dozens of important features used often in fast-paced environments, with an easy-to-use operation — that won't change the way you work. You get timely information about your customers and clients, sales activity and tracking, direct mail, lead and inquiry management, sales forecasts, employee activity reporting/tracking and more.

SuperOffice allows employees at any level of expertise to become productive instantly. Work loads are more easily handled and time isn't wasted, vital information doesn't sit untouched or lost and efficiency is boosted with little effort. This remarkable product puts four powerful, easy-to-use office management tools — client contact directory; daily schedule planner; follow-up tracking and correspondence templates — together with a shared database! So vital, up-to-the-second data is at everyone's fingertips.

All of the individual tools are fully integrated for streamlined operation, and can be used as a single- or multi-user database system.

Diary. Included in the Diary is the Agenda, an advanced time planner that allows complete control over daily schedules. References include customer names and notes detailing the activity. Privacy encourages use of program for all scheduling, eliminating the need to maintain multiple calendars and ensuring that action items are not overlooked.

Follow-Up. Follow-up provides a comprehensive overview of past and planned activities by account and provides key information about the types of services you are providing your customers and clients. When a customer calls, anyone within the organization can scan all past and planned activities and be of immediate service.

Customers. The Customers' file stores all data about your customers, clients and prospects, including address, phone, fax, and key contacts. An unlimited number of customers and contacts can be entered, with room for notes about each person. Because SuperOffice utilizes a shared database, all users can edit any record.

Letter, Fax and Spreadsheet Templates. SuperOffice simplifies correspondence by providing a direct link between a selected customer record and various pre-designed letter and fax templates, which work with most popular word processing software. By searching for a specific account and choosing a template, the company's mailing address, contact person and date are automatically inserted.

Specifically designed to track the kinds of information needed by business people dealing with clients or the public.

SUPEROFFICE

BBD3794 **SuperOffice Competitive Upg.** ... **$99.95**
BBD3795A **SuperOffice Single User** **$295.00**
BBD3795B **SuperOffice 5 User** **$1295.00**
BBD3795C **SuperOffice 10 User** **$1795.00**
Requires 286 or higher; Windows 3.0; min. 2MB RAM; monochrome, gray scale or VGA monitor; any laser or dot matrix printer.
Call for further information on Macintosh Version.

International Orders: 305-443-8212 24-Hour Fax Line: 305-444-5010 **FREE FEDERAL EXPRESS SHIPPING**

Circle 259 on reader service card

© 1992 TigerSoftware, 800 Douglas Entrance, Suite 765
Coral Gables, Florida 33134

Turn Your Black-And-White Hand Scanner Into An Explosive, True COLOR Scanner!

REVIEWER'S NOTEBOOK: *I own a 256 grayscale hand scanner and often scan photos or illustrations for use in the TigerSoftware catalog. I don't own a color scanner (they are very nice, but very expensive), however a color scanner would sure come in handy sometimes. I could use color to create color slide shows, presentations, newsletters — and posters of the kids. That's why I was particularly intrigued with the CAT Color Converter. It actually converts my B&W hand scanner into a true color scanner! Just attach your 4" wide hand scanner to the CAT Color Converter and scan your color photo 3 times, using the built-in colored filters. When you've completed your scans, the CAT software combines the images into a fully balanced, true color image automatically. A legitimate alternative to a color scanner, with top-notch quality.*

The CAT Color Canverter works with all leading B&W scanners.

The CAT Color Converter allows you to capture thousands of colors and if you have a grayscale hand scanner, you'll get up to 16 million vibrant colors. If you've got a VGA display adapter, the optimal 256 colors will be automatically selected for scans with lifelike color and rich detail. The powerful CAT Color Converter software (included free) allows you to easily adjust the color palettes, brightness and contrast. Using this powerful software, you can create exportable .PCX and .TIF files in RGB format for use in desktop publishing, draw and paint programs (I work extensively in PC Paintbrush, DeluxePaint and ColorRIX, CorelDRAW! and Designer) to combine text, graphics, special effects and more. Everything you need is in the package: The CAT Color Converter scanning guide (12"×10"×1"), with built-in color filters, light source and hand scanner mounting device. You also get the CAT Color Converter image processing software, power adapter and complete documentation.

CAT Color Converter Supported Hand Scanners: The Complete Half-Page Scanner 200/400/GS; DFI Handy Scanners HS-2000/3000/3000 Plus; GeniScan GS-2000 Plus/4000/4500/B105G; Logitech ScanMan/ScanMan Plus/ScanMan 32/ScanMan 256; Marstek Mars 105/105 Plus/800; Mouse Systems PageBrush/32; Niscan/Niscan GS; Primax SE-400/SE-800.

Use Your Scanner With Your Laptop! Scan On The Road, At A Meeting Or At The Library!

A perfect match. Your portable or notebook PC and your hand scanner. The CAT Hand ScanAdapter LPT connects directly to your computer's parallel port and allows you to capture any information, photo or design—anywhere. The small, pocket-sized device slips into your briefcase and comes complete with CAT Image Enhancer software which automatically converts hand-scanned, dithered images into 16 levels of gray. It also allows you to create files for use in professional graphics manipulation. It's simple, fast and very convenient. Works beautifully with all leading black & white hand scanners that we tested: The Complete Hand Scanner and half-page scanner, Logitech, Marstek, DFI Handy Scanner and Geniscan. Allows direct output to Epson dot-matrix, HP LaserJet and DeskJet, supports Hercules, CGA, EGA and VGA display, allows automatic image scaling and cropping and more.

CAT Hand ScanAdapter LPT Supported Scanners: The Complete Hand Scanner 200/400; The Complete Half-Page Scanner 200/400; DFI Handy Scanners HS-1000/2000/3000/3000 Plus; GeniScan GS-2000/2000 Plus/4000/4500; Logitech ScanMan/ScanMan Plus; Marstek Mars Scanners.

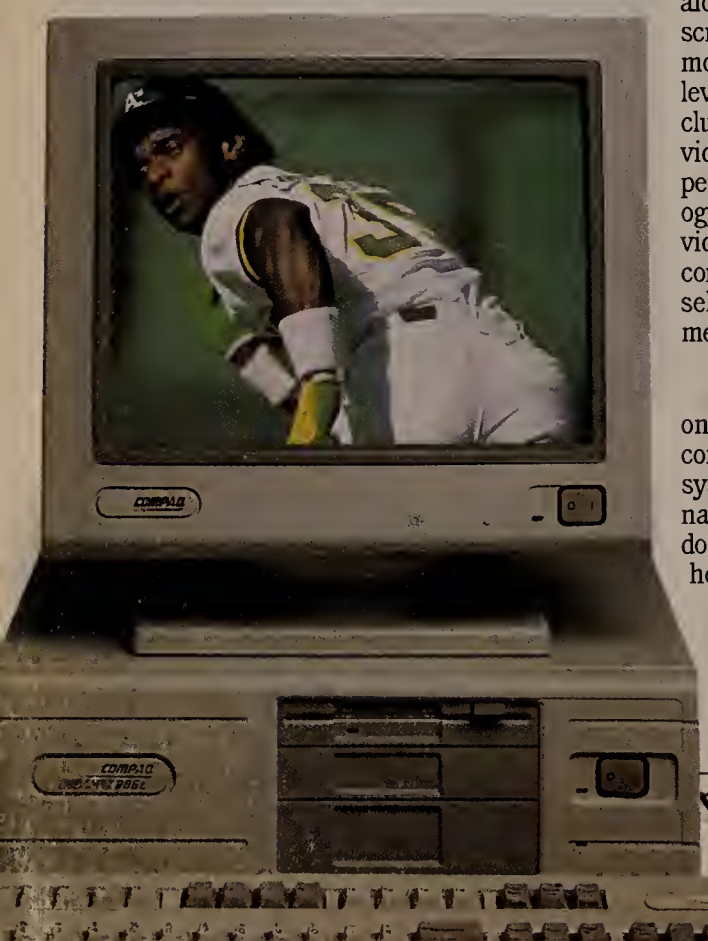
CAT

BBD3120 **CAT Color Converter** **$159.95**
BBD3121 **CAT Hand ScanAdapter LPT** **$139.95**
IBM PC XT, AT or compotible; VGA or SuperVGA graphics adapter; 640K RAM Memary with hord drive; PC-DOS or MS-DOS 3.1 or higher; supported hand scanner.

Watch TV — On Your Computer!

Full Audio And Video — 119 Channels And Cable — Right On Your PC!

I always wanted to do this! I'm often working at my computer, preparing a spreadsheet or working on a word processing file, and thinking "I wonder who's on Oprah today?" During baseball season, it would be nice to catch a couple of innings of a daytime doubleheader from Fenway Park or tune in for CNN's Headline News. Now, Desktop TV puts a TV set inside my computer that lets me watch my favorite shows! I can return to my spreadsheet at anytime and continue to listen to the audio of the news, Good Morning America or Donohue. If the conversation gets wild, one keystroke switches me back to television.



Desktop TV supports both DOS and Windows 3.0 environments, without any reconfiguration. And I can even watch TV while my computer prints, does backups — anything that doesn't require my monitor. Desktop TV has no adverse effect on my monitor, it runs as it always does.

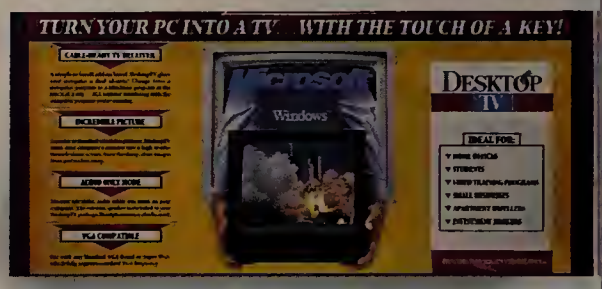
This is one of the hottest new innovations to come along this year, delivering a great picture on my PC screen just like my TV at home (PC displays provide more dots per inch, and Desktop TV delivers VGA-level quality). I get full 119-channel compatibility (including cable, VHF, UHF, VCR, video camera and videodisc) and great sound, with Desktop TV's superb speaker system. Desktop TV advanced technology shatters the barrier between high-quality analog video and computer-based information. Everything is controlled from my keyboard: video source, channel selection, volume control, audio monitoring and even memory settings for your favorite channels!

How Does It Work?

It's simple. The Desktop TV board installs in seconds into a standard PC expansion slot. It comes complete with cables, control software and speaker system. Just connect a standard coaxial cable, external antenna or rabbit ears to the card and you're done. Desktop TV hooks up just like your TV at home. I'll never miss a World Series game again!

It's Fun, But There Are Serious Applications As Well...

I love my Desktop TV system. I can watch the news, the closing stock reports and more without leaving my office. But the potential uses of this system are unlimited. Firms with internal broadcast facilities can use Desktop TV to distribute material throughout their offices without moving their staff to viewing rooms. By attaching a PC to a VCR, corporations of all sizes can conduct on-screen training sessions using pre-recorded videocassettes (many software vendors include tapes in their packages). In fact, using a video camera, you can turn your PC into a video monitoring station for security.



Special Features:

- Full Screen Video on a computer monitor.
- Quality color picture.
- One touch PC to TV switching.
- 119 channel TV tuner.
- Full keyboard control.
- Audio monitoring mode.
- *RF Video input:* F Connector; for VHF, UHF and Cable TV, VCR, videodisk, or network supporting RF modulated NTSC video signal.
- *Audio output:* Mini phone jack, for connection to a speaker or headphones; external speaker included.
- *Video graphics adaptor:* VG1 model requires a VGA board; MF1 model supports EGA & VGA boards.

DESKTOP TV

BBD3882 **Desktop TV** 5¼" & 3½" **$299.00**
IBM XT/AT (286/386) or compatible; MS-DOS 3.1 or higher; controls availoble either through DOS, a TSR or Windaws 3.0.
Coll far further details.

ydar Call Toll-Free: **1-800-888-4437**

We Accept: VISA

Circle 259 on reader service card

Add Thunderous Pro-Quality Sound To Your PC!

What's it all about — MultiMedia? Audio boards? Sound effects and mixing? How about this new generation of games that include monstrous audio effects? How do I get those capabilities on my PC? It's easy, and not just for professionals anymore! Now, with Media Vision's easy-to-use, low cost audio systems, you'll hear the blast of rockets, the screech of tires, the jingling of keys and the screams of the latest victim. Some games are so audio intensive, they're nothing with the sound to accompany the video (think about the last movie, commercial or TV show you saw and how the music played such an important part). Listen to soundtracks and special effects built into other software programs as well with the awesome Thunder Board. Just slip in into your PC and start hearing your software in full stereo sound. Thunder Board is completely compatible with AdLib and Sound Blaster, so you can play games that support synthesized music.

But when you're ready to move to a higher level of audio presentation, the Pro AudioSpectrum has more features and value packed into an easy-to-use system than anything else around. Record and playback soundtracks for presentations, perform fast MIDI sequencing, automated mixing and more. Choose from a library of sound effects.

The Awesome Thunder Board.

Pop in the latest PC game software and hold on to your seat. Thunder Board explodes with full stereo sound for your PC. It allows up to 22KHz digital audio sampling to take full advantage of the blistering new games, dynamic filtering for crisp sound and an 11 voice synthesizer for great reproduction of musical sequences. Thunder Board even provides you with free software samples: NOVA 9 (the sequel to Stellar 7, an audio classic), Lemmings and Lexi Cross, three of the hottest new entertainment product on the market today. Each takes you for a ride on the most incredible sound system you can buy for the PC. There's more, like the Thunder Master software that's included free. It allows you to record and playback your own sound files. Use a microphone or another sound source. Mix pre-recorded sound files, and add special effects to your audio selections. Find out what you've been missing — get a Thunder Board.

Pro AudioSpectrum

Let's say you were giving a presentation to 50 people. You had incredible overhead transparencies. You had quotes that endorsed your product, typeset and used as part of your presentation. That would have impact. But what if you could present your customer's actual voice endorsing your product. That's more impact. You can do it with Pro AudioSpectrum, and sync it precisely with your visuals. What if you added a musical score to your presentation? More impact still. Pro AudioSpectrum turns your PC into a recording studio, with full MIDI capabilities, so musical compositions sound like the composers intended them to. Or, add ambient background sounds to your presentations — a ball park, crowds, sirens, singing birds and rustling leaves. Then, a special effect or two, to explode at the perfect spot, pops, pings, or the resonant sweep of white noise. That would really drive your point home!

The Multi-Media Performer

This single audio card transforms your computer into a full Microsoft Level 1 multimedia platform. One card — mega sound, with plenty of built-in instrument sounds, noise reduction features, studio and special effects, mixing features, output amplification — even a music clip library (jazz, pop, rock, classical and more!). And you can do it! It's fast, easy and fun. Record soundtracks, voice overs and more from a variety of stereo sources.

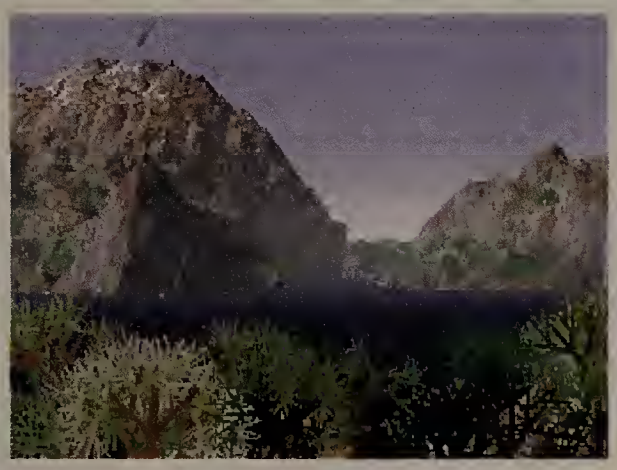
MEDIAVISION

BBD6816 **Thunder Board**	**$169.00**
BBD6818 **Pro AudioSpectrum** Dual	**$389.00**

Create Realistic, 3-D Landscapes That May Cause Vertigo!

Or View The Heavens In An On-Screen, Digitized Planetarium!

REVIEWER'S NOTEBOOK: *Amazingly realistic electronic landscapes that put you on the edge of your seat. Using new VistaPro is like hiring a helicopter and flying over some of the world's most picturesque natural wonders: Mt. St. Helens — before and after the eruption, legendary Half Dome and El Capitan in Yosemite, Crater Lake in Oregon and the Cauldera area of Olympus Mons — Mars! You can create your own scenes from the billions of randomly generated fractal landscapes built-in — and adjust camera angle, focal length, lens power and more. Assemble animated sequences and incredible dreamscapes with VistaPro's powerful animation engine. The result is stunningly realistic images that can move you right into the landscape.*



We were also impressed with VistaPro's sister product, Distant Suns. This is a fascinating astronomical playground for students, amateur astronomers and curious spectators. It displays the night sky with precise accuracy for any part of the world, including 9100 stars, 450 galaxies, nebulas and star clusters. Add up to 3,000 custom objects to the sky. Click on any object and bring up detailed information, including your choice of over 200 photos.

Arthur C. Clark, author of 2001: A Space Odyssey says "I'm really boggled, it's beautiful, especially when all the lights are off. I'm totally awed by what you have done!"

VistaPro.

Create 256-color images with high-quality resolution in true 3-D. Produce animated "flights" over custom landscapes, with several modes of coloring and shading and fractal image detail. Add trees and mountains, snow, waves, haze, rivers and cliffs. Zoom in, swoop in or swing out for a broader view. Allows you to paint your landscapes to produce thousands of possible effects. Light your scenes the way you want — daytime, midnight, sunrise or sunset, produce lifelike shadow detail and natural movement. You'll create images that trick your brain into thinking they're real! Also includes a special bonus program that creates landscapes from Mandlebrot, Julia and Lyapunov sets — bringing their wonderful work to 3-D life! Don't miss the animated flyby of Mars (and the Martian version of the Grand Canyon)!

Distant Suns Windows.

A time machine and a telescope! Distant Suns Windows allows you to travel to any date and see the unique view of the sky. The changing phases of the Moon, the planets and the stars, the constellations and more. Travel 1,000 years back in time and observe the exact sky that inspired the ancient Anasazi astronomers. Or discover how the Egyptian Pharoahs built the pyramids eternally aligned with distant suns. See the mysterious movement of Mercury and Venus, rare planetary eclipses, stellar occultations and witness instellar dust forming nebulas.

VIRTUAL REALITY LABS

BBD3283 **VistaPro**	**$89.95**
BBD3284 **Distant Suns**	**$89.95**
BBD3282-5 **Distant Suns & VistaPro Bundle** 5¼"	**Save $20**
BBD3282-3 **Distant Suns & VistaPro Bundle** 3½"	**Save $20**

VistaPro: *640k RAM w/540k free, hard disk w/3Mb free, VGA/SVGA graphics card (VESA driver), and driver.* ***Distant Suns:*** *Microsoft Windows, 286 or greater, EGA or VGA and hard drive.*

A.B.C.
WINDOWS
DOS
DOS

Windows Word Processors

IF EASE OF USE AND THE WEALTH OF FONTS IN THESE WORD PROCESSORS CAN'T CONVINCE YOU WINDOWS IS WORTHWHILE, NOTHING WILL.

BY GEORGE CAMPBELL

In today's rugged economic landscape, anything you can do to improve your image is not just a good idea—it's critical. The latest visually oriented *Windows* word processors make it much easier to produce documents with the impact you need. The combination of fast-formatting, accurate page layouts that you can see on your monitor, and the capability to link to other *Windows* programs has made *Windows* the environment of choice for document preparation.

It could easily take you weeks or months to explore and master any of these six feature-packed word processors, but the best of them let you get started in a hurry, and you can learn the fundamentals more quickly than with DOS-based *Word* or *WordPerfect*. These *Windows* packages sport fast, icon-based commands, one-click style sheets, seamless document conversions, and simple integration of graphics and charts. Using fonts, designing multicolumn pages, and creating complex documents such as newsletters and advertising materials is now commonplace for *Windows* users.

You no longer have to leave your word processor to access spreadsheets, data bases, and other applications. Dynamic Data Exchange and the new Object Linking and Embedding links let you incorporate all this data into your documents, making your word processor your control center.

Even if *Windows* itself doesn't light your fire, you'll discover that if you want all the latest, greatest tools and tricks, you'll find them only in *Windows* word processors—software publishers are clearly devoting their best efforts to the *Windows* arena. While all three of the *Windows* programs in our

ILLUSTRATIONS BY ANDREA BARUFFI

DeScribe 3.0

PROS: Excellent kerning and tracking, stretch and shrink text, automatic drop caps, powerful undo **CONS:** Fairly difficult interface, poor group editing and long-document features, limited mail merge, hogs resources

Formerly available only for OS/2, *DeScribe* now runs under *Windows*. Although the program adds a few nice desktop publishing tricks such as special text effects, its editing features more closely resemble the lower priced *Pro Write Plus* and *JustWrite*. It's recommended only for OS/2 work groups that have already standardized on *DeScribe* and want to move gradually to *Windows*.

DeScribe's basic interface is pretty standard *Windows* fare, but it's still more difficult to learn. The users' manual lacks an index, and the indexed reference manual is topic oriented rather than the more efficient command-oriented organization. Menus are illogical. For example, page layout tools are in the Object menu, while you use the Edit menu to insert page breaks. Where the other programs' dialogs let you modify values for margins and other variables by clicking on a scroll bar, *DeScribe* makes you type them in.

DeScribe's keyboard shortcuts aren't easy to remember. For example, <Ctrl>-B runs a backward search, rather than boldfacing text as is typical. As with *WinWord*, when you finish an operation, selected text remains selected. That in itself is okay, but unlike *WinWord*, clicking elsewhere doesn't remove the highlight, so you can easily end up deleting highlighted text when you don't mean to.

When using font-scaling software like *Adobe Type Manager*—you'll want to with any *Windows* word processor in order to make on-screen text look presentable at large and small point sizes—*DeScribe*'s screen display often falls behind your typing, and there's no fast-draft editing mode to escape to. What's worse, *DeScribe* uses more *Windows* resources than it should, making it difficult to run other applications simultaneously.

Formatting is also tough. Like the other programs here, *DeScribe* offers icons for quick access to formatting, but instead of placing them off the page, *DeScribe* puts them in a floating toolbox that obscures the text or menus. The right mouse button hides and displays the toolbox, but it's still obtrusive and you can't slap them onto any side of the screen as you can with *Ami Pro* or *WordPerfect for Windows*. Also, you're limited to formatting icons only.

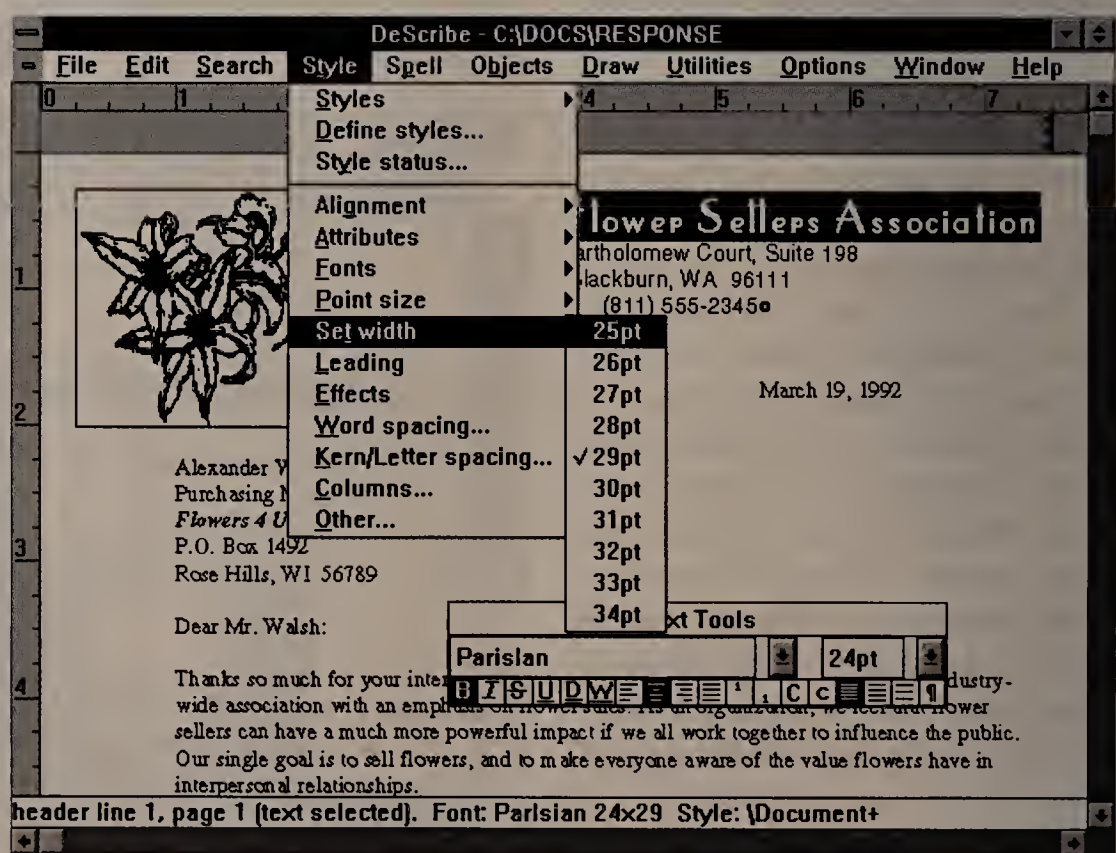
DeScribe is adequate for simple letters and other short, uncomplicated documents, but it fell down in our other tests. Our long business report was difficult to create without master document, outlining, or group editing tools. Group workers will also miss the ability to insert notes or comments in documents, and footnotes are completely manual, without even the simple convenience of auto-numbering.

DeScribe delivers some helpful publishing features, such as automatic dropped capitals and stretched or compressed text. Kerning and tracking are superior and, although *DeScribe* lacks charting, you do get a drawing module. Creating our advertising flier and newsletter were complicated, however, by a lack of text frame linking, snap-to grids, and the inability to create styles from preformatted text.

Mail merges are hampered by a lack of *dBASE III* file support, and you're forced to insert merge fields by typing them in. Worse, the program offers no conditional merge commands, so you can't customize your documents based on the merge data. *DeScribe* does include a capable BASIC-like macro language.

DeScribe delivers some helpful publishing features, but it fell down in our long-document tests.

DeScribe 3.0 falls short of the mark in almost every area. You can do better with any of the other word processing programs reviewed here.



Unique to DeScribe is the capability to stretch and shrink text horizontally. This feature allows you to manipulate headlines to suit your needs.

Bitstream Invites You To Take The FaceLift For WordPerfect Challenge.

st hit 'Ctrl-F8' & ago, a great-looking ordPerfect document!

Fred H. Hutchison
President
F.H. Hutchison & Co.
Washington, D.C.

YOUR TYPE IS FANTASTIC!!

Lori Paolucci
Systems Analyst
Kraft General Foods
White Plains, N.Y.

ceLift for WordPerfect brought out the creative genius in me.

Kathy Lettenmaier
Sr. Records Clerk, AT&T
Basking Ridge, N.J.

I'M CONVINCED!

Boyd Savage
System Administrator
Roberts & DiPaola, P.A.
West Palm Beach, Florida

Had No Idea My Dot Matrix Printer Could Pump Out Type Like This.

KENNETH ARNOLD
CONSULTANT
KINDRED SYSTEMS
TUCSON, AZ

Lately, it seems like almost every WordPerfect® user is creating terrific-looking documents in seconds with FaceLift™ 1.5 for WordPerfect.

After all, who'd resist a utility that gives you 16 award-winning Bitstream® typefaces in 2-500 point sizes by simply pressing 'Ctrl-F8' in WordPerfect? Who'd pass up the chance to instantly produce top-quality type from almost any LaserJet,® dot matrix or inkjet printer? Who'd miss out on all this, knowing that FaceLift 1.5 for WordPerfect needs just a fraction of your hard disk space, and takes only 10 minutes to install?

If you've read this far, we suspect the answer is ***you.***

Then take the FaceLift for WordPerfect Challenge. Try FaceLift 1.5 for WordPerfect for 30 days. See how easy it is to make your documents look outstanding. If you're not completely satisfied, return it for a refund. You risk nothing.

You'll get these 16 Bitstream typefaces:

Swiss™ 721 Roman
Swiss 721 Italic
Swiss 721 Bold
Swiss 721 Bold Italic

Dutch™ 801 Roman
Dutch 801 Italic
Dutch 801 Bold
Dutch 801 Bold Italic

Monospace 821

Bitstream Cooper Black

Formal Script 421

Park Avenue™

Brush Script™

188 ITC Zapf Dingbats®
☆✂☎✉✓☛✗✐➪❶❷❦✆

150 Symbols Monospaced
ΑΒΧΔΕΦΓαβχδεφγ123⊕ΥΩ

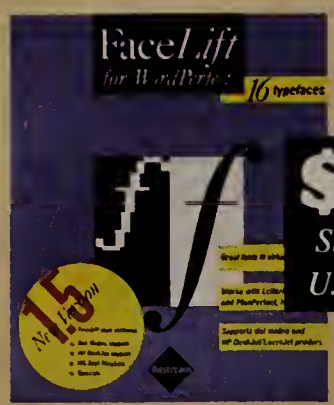
150 Symbols Proportional
ΑΒΧΔΕΦΓαβχδεφγ123⊕ΥΩ

FREE OFFER

Get a free Bitstream Charter® typeface family–a $129 value (U.S.)–just for telling us what you think of FaceLift 1.5 for WordPerfect (using FaceLift, of course). Mail your comments with your product Registration Card by 10/31/92 to:

Bitstream Inc.
Attn: Sales/Free Offer
215 First Street
Cambridge, MA 02142

"FaceLift's output was the most impressive of all (font) packages tested..."
PC Week 8/26/91



$99
Suggested U.S. Retail

For more information, see your local dealer, or call: 1-800-522-FONT

Bitstream

© Copyright 1991 Bitstream Inc., Cambridge, MA. Bitstream is a registered trademark and Bitstream Charter, FaceLift, Swiss, and Dutch are trademarks of Bitstream Inc. WordPerfect is a registered trademark of WordPerfect Corporation. ITC Zapf Dingbats is a registered trademark of International Typeface Corporation. LaserJet is a registered trademark of Hewlett-Packard Company

41 on reader service card

Round-The-Clock Protection

But the clock will run out on our $60 savings offer.

Now you can protect your computer against both viruses and intruders 24-hours a day for just $69, but only if you order by April 30, 1992.

More than one out of every ten PCs were crippled by viruses last year, according to *ISPNews* (June 1991). And the frustration and financial loss brought on by hackers is beyond calculation.

AllSafe™, from XTree Company, is the most powerful protection program available. First, AllSafe contains ViruSafe™, the most effective medicine for the prevention, detection and elimination of known or unknown viruses, whatever their alias or mutation.

ViruSafe is 24-hour **preventative** medicine. It constantly monitors for unauthorized behaviors that alert it to a virus' attempts at replication. When it catches a virus in the act, ViruSafe isolates and removes it. If the virus was unknown, ViruSafe even updates its own signature file so you can scan all backup diskettes or other computers for infection. ViruSafe is always on guard against any kind of computer virus.

AllSafe guards against unauthorized access, too. Flexible password protection lets you limit access to as much of your hard disk as you like: how your computer is booted, access to DOS commands, disk read and write access, and more. Plus AllSafe provides a security audit trail and log that reports any break-in attempts.

For all its preventative power, AllSafe is easy to install, configure, and use - like you'd expect from an XTree product.

Get The Complete Cure Today And Save $60

As a special introductory offer, you can get the complete protection you need directly from XTree Company for only $69, a savings of $60.

Keep The Viruses Out Of Your PC For A Low $49

If you simply need virus protection for your PC, we have ViruSafe™, providing the best prevention and search-and-destroy virus extermination available. You can order ViruSafe for just $49, regularly $99.

Take A Moment To Give PC Productivity A Shot In The Arm . . .

Boosting PC productivity may be easier than you think. XTreeGold™ 2.5 gives you easy file and disk management and complete relief from the hassles of DOS. You get room (thanks to file compression and ZIP Archives) and a remarkable view. XTreeGold lets you see graphic files with unprecedented clarity – with full resolution and no distortion, in up to 256 original colors. XTreeGold 2.5 also lets you view files from many word processors as well as from Excel, Paradox, Lotus and dBASE. And XTreeGold 2.5 builds on whatever MS-DOS you use, including DOS 5.0. Find out more today by calling us toll-free.

Circle 319 on reader service card

To Order Call Toll-Free! (800)388-3949

For more information or Canadian orders, call (805)541-0604. Offer is good in U.S.A. and Canada only. All prices in U.S. dollars.

XTREE COMPANY

Trademarks/owner: AllSafe, ViruSafe and XTreeGold are trademarks of XTree Company/Executive Systems, Inc. ViruSafe was developed by Eliashim Microcomputers, Ltd.

© 1991 Executive Systems, Inc. All rights reserved.

NOW SAVE 58%

Add PC World To Your Management Reading List

ACT NOW! Take advantage of these Special Savings and we'll BILL YOU LATER!

Recycled Paper

☑ YES! Bill Me Later

Rush me one year (12 monthly issues) of PC World for only $19.97. That's almost 58% off the annual cover price of $47.40 and over 33% off the regular subscription rate of $29.90—plus I receive FREE: PC World's PowerBase*.*.

NAME _____

COMPANY _____

TITLE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PowerBase *.* diskette is offered solely by PC World Magazine. It should not be confused with 'power-base' which is relational database software offered by Compuware Corporation. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

FREE PowerBase*.* Disk -50 Tips, Macros and Utilities

PC WORLD

4HS98

☑ YES! Bill Me Later

Rush me one year (12 monthly issues) of PC World for only $19.97. That's almost 58% off the annual cover price of $47.40 and over 33% off the regular subscription rate of $29.90—plus I receive FREE: PC World's PowerBase*.*.

NAME _____

COMPANY _____

TITLE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PowerBase *.* diskette is offered solely by PC World Magazine. It should not be confused with 'power-base' which is relational database software offered by Compuware Corporation. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

FREE PowerBase*.* Disk -50 Tips, Macros and Utilities

PC WORLD

4HS98

☑ YES! Bill Me Later

Rush me one year (12 monthly issues) of PC World for only $19.97. That's almost 58% off the annual cover price of $47.40 and over 33% off the regular subscription rate of $29.90—plus I receive FREE: PC World's PowerBase*.*.

NAME _____

COMPANY _____

TITLE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PowerBase *.* diskette is offered solely by PC World Magazine. It should not be confused with 'power-base' which is relational database software offered by Compuware Corporation. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

FREE PowerBase*.* Disk -50 Tips, Macros and Utilities

PC WORLD

4HS98

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC World
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC World
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC World
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

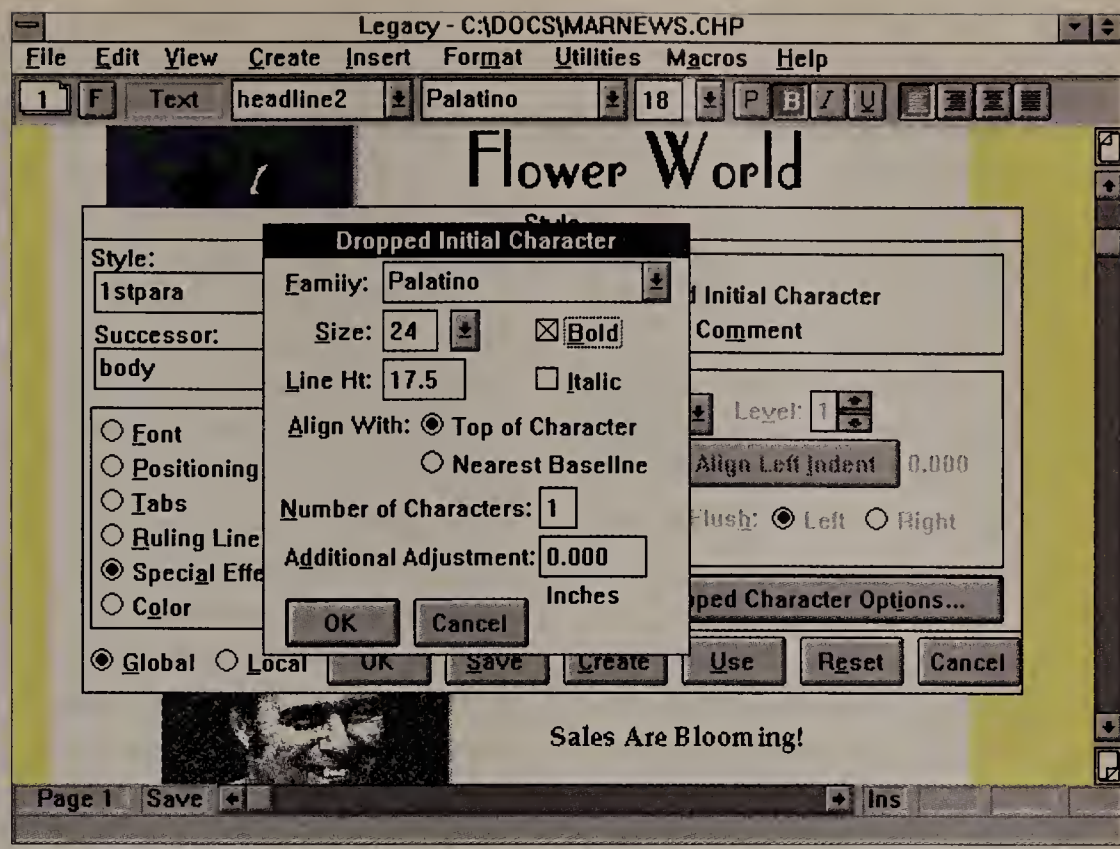
Legacy 2.0

PROS: Text flow between frames, snap-to grids, excellent kerning and tracking, brightness/contrast controls **CONS:** No conditional mail merge, no redlining, no math functions, weak outliner, saps resources

Slowly but surely NBI's *Legacy* is evolving into a very capable word processor, especially for people who create complex, graphics-laden documents. Version 2.0 adds customization features and gives a much-needed boost to ease of use, while retaining its considerable desktop publishing skills.

Learning this complex program is simplified by an interactive tutorial, and the well-indexed manual offers a task-oriented layout. But *Legacy*'s interface is still a tough nut. Menu logic is flawed—for example, you must use three menus to create and edit styles. When working with frames, you must click a button on the icon bar to switch from editing a frame's layout to editing the contents of the frame.

Basic editing is simple, however. Cut and paste uses normal *Windows* commands. A number of editing views, including a custom-sized view, are available, although you're limited to working with a single document at a time.



Features such as Legacy's automated drop cap tool help make it a good platform for creating newsletters and other desktop publishing documents.

Formatting text is just as easy, using simple keyboard shortcuts, handy icon bar commands, or menu commands. You can't alter the icon commands as you can with *Ami Pro,* but you can assign macros from the powerful new macro language. Other drawbacks include style sheets that won't let you create a style based on an actual example and a tab ruler that doesn't appear during normal editing.

Creating letters is easy but takes a long time. Group-edited documents are touchier and there are no master documents, bookmarks, or redlining tools to simplify the task. The revision tracking and document summary tools can't make up the difference. Plus, *Legacy* is the worst resource hog of the group.

If you're doing mail merge, you'll wish NBI had included conditional operators. *Legacy* can read *dBASE III* files directly, however, letting you insert merge fields from a pick list.

Legacy comes into its own with desktop publishing. A snap-to layout grid helps align frames to add precision. Best of all, though, you can link multiple frames even across pages. Text in one frame automatically flows into other linked frames, making multipage jobs easy. Graphic support is excellent, with good handling of TIFF files and a competent drawing program, but no charting module. Automatic dropped capitals and bulletted lists are nice extras.

If you require heavy desktop publishing, *Legacy 2.0* is a good choice. It comes closer to programs like *Ventura Publisher* than any other program here. But for general document preparation chores, you'll want an easier program.

Running the Gauntlet

To make our evaluations mirror the real world, we tested these programs with several types of documents, each linked to different work scenarios.

Letter or fax *(two pages)*: Focusing on simple editing and formatting, this test applies to everyone who does word processing.

Advertising flier *(one page)*: Combining text and graphics, this document gave desktop publishing and formatting tools a workout.

Newsletter *(six pages)*: Newsletters require powerful desktop publishing, typographical, and formatting tools, plus graphical tools.

Business report *(100 pages)*: This report measured text manipulation, spreadsheet data, graphics, charts, and tables, as well as long-document and group editing tools.

Mail-merge letter *(two pages)*: Using a *dBASE III* address list, this test examined editing and formatting tools, along with the capability to merge data to create an effective mass mailing.

Buying Smart: A Clear Window on Word Processing

Because the best of today's *Windows* word processors can serve as a control center for all your work, making the right choice can be key. Ease of use plus editing and formatting tools should be your highest priorities, with customization and automation, graphics handling, and performance close behind.

EASE OF USE

Look for logical, well-conceived menus that group related commands and easy keyboard shortcuts. In a *Windows* word processor, effective use of the mouse is vital—for example, dialog boxes should be designed so you can increment values by clicking on a button rather than typing in numbers. Icons can speed many tasks, but look for a program that lets you select a subset of icons and arrange them on screen. You should be able to assign macros to an icon and add macros as menu items. You'll learn a new program faster if it includes an interactive tutorial and provides help making the transition from your old word processor. *Word for Windows* is the easiest program reviewed here.

EDITING

Each of these packages offers the ease of *Windows* text-editing tools, including quick cut and paste, search-and-replace tools, fast text selection for block operations, and undo commands. The ability to move text with your mouse is a plus. Your program should be able to edit more than one document at a time, and should let you edit your report in magnified and reduced-size views that show the exact page layout. You'll also need a fast-draft mode for quick text entry. More advanced editing tools fall into three categories:

Writing aids You'll find context-based spelling checkers in all these programs, and *Legacy, Word for Windows,* and *WordStar for Windows* also include grammar checkers. Each has a thesaurus, but some are better than others: *Ami Pro, DeScribe, Legacy,* and *WordStar for Windows* all use a version of the Merriam-Webster Thesaurus, which is extremely sexist. For the word "woman" it offers: mistress, girlfriend, inamorata, lover, paramour. Look up "man" and you see: human, being, individual, person. For large projects, you'll need an automatic outliner with the capability to expand and contract—the best ones let you hide a document's actual text within the outline, so you can quickly navigate a large document.

Long-document options The capability to generate a table of contents and an index is a minimum requirement. You'll benefit if a program can build a table of contents based on heading styles. Bookmarks let you jump to fixed locations in your document, and automatic cross-referencing is valuable. You should look for a master document feature that allows you to assemble a document from smaller sections. Automatic footnotes and endnotes and equation editors are essential for academic and financial users.

Group editing tools LAN users who work with complex documents created by different authors need annotations for comments passed among users. Redlining automatically tracks and marks changes in a document, allowing editors to make changes while keeping the original text in place. Then, when all changes are approved, they can become permanent with one command. Document comparison and revision-tracking tools also monitor changes and help keep complex documents current. Document summary features maintain editing and revision records and allow quick file location using keywords to identify files. E-mail support allows groups to communicate without leaving their word processors. All in all, *Word for Windows* offers the best mix of basic and advanced editing tools.

FORMATTING

The days of simple documents printed in one fixed-width column are long gone, and good riddance. You'll need a complete set of text, paragraph, and page-formatting tools to do the job today. Multiple columns with the capability to create columns with different widths are a must, and you'll need quick font selection and text formatting. Full support of scalable fonts, either printer-based or using font-scaling software such as *Adobe Type Manager* or *FaceLift* is a must.

With style sheets you can quickly format documents with character and paragraph attributes. If you can save style sheets separately from the document, you can maintain several standard layouts and apply them at will. You'll also need the capability to import and export files from other word processors while keeping basic formatting in place. *WordPerfect for Windows* and *WinWord* both recognize a file's format and don't force you to confirm file type when you import text—a real timesaver if your associates use different programs.

For desktop published documents, you'll want kerning (let-

terspacing) and tracking (wordspacing) controls, plus the ability to link two or more frames with automatic text flow between them—especially handy for newsletter stories that continue on another page. Special text effects, such as stretching, shrinking, or bending text around curves can help punch up printouts. *Ami Pro, Word for Windows,* and *WordPerfect for Windows* all tie for first place in formatting.

PERFORMANCE

Speed is always important, but all these programs work at a good pace as long as you have a 20-MHz 386 CPU or faster. *WinWord* delivers the best overall scores but each program shines in one or more individual areas. Printing speed is the big separator. If you want to start a print job then get back to work on another document or application, look for a program such as *AmiPro* that has its own print utility.

CUSTOMIZATION AND AUTOMATION

A programmable macro language is valuable for customizing your program to perform typical, yet complex maneuvers with a single keystroke or mouse click. The capability to create macros by recording keystrokes is a must, but some users will also want to edit more advanced macros with a complete macro language. Corporate users will enjoy a program that can make automated templates, which create preformatted documents that prompt users.

If you ever send mass mailings with personalized letters, you'll want competent mail-merge tools. You should be able to use native files from *dBASE* or other data base managers and choose merge fields from a menu list. Conditional commands let you customize mail-merge letters by inserting text based on the contents of your data.

Because *Windows* is a multitasking environment, you'll want links to other applications so you can work without constantly switching programs. Two-way DDE (Dynamic Data Exchange) links, which automatically pass data between programs, are a must, but the new OLE (Object Linking and Embedding) links are easier to use. OLE links let you run the program that created an embedded object, such as a chart or worksheet, by simply double-clicking on the object.

If you'd rather create worksheets with your word processor, all these programs include easy-to-use table editors. Once again, *Word for Windows* is the winner at these advanced corporate features.

GRAPHICS

A picture paints a thousand words, and so do good graphics capabilities. Your program should be able to import all the popular graphics formats, and with built-in drawing and charting tools, you won't have to jump to another application to create or edit images and graphs.

Since all these programs offer framing tools for text and graphics, look for a program that lets you position, scale, and move frames without accessing a dialog box. If you need very precise layouts, you'll want to have snap-to grids on screen. With its advanced handling of scanned TIFF images, *Ami Pro* is still the wizard of graphics.

PRICE

All six programs cost $495, with street prices ranging anywhere from $250 to $350. These prices seem quite reasonable for the many jobs that these programs can handle. If you're using another major word processor, check with the vendor for special competitive upgrade pricing.

SERVICE AND SUPPORT

Service policies vary greatly from product to product, but you should at least insist on unlimited free support. Toll-free telephone numbers and extended hours are a real plus. If you use on-line services, check for support forums. Finally, fax support can eliminate the possibility of busy signals and holding patterns.

To evaluate technical support, we made three calls to each company at different times of day. The calls involved asking a simple installation question, a query on how to change the program's default font, then a tough question about setting up a mail-merge letter.

We evaluated the accuracy and clarity of the answers we received, and factored in the time needed to get an answer, wait on hold, and wait for a return call, if needed. If top-notch support is crucial for you, *WordPerfect for Windows* will make your day. Check with the vendor for special upgrade pricing. Most offer competitive upgrade packages for $150 or less.

Word for Windows 2.0

PROS: Easy to use, handy envelope printer, automated mail merge, OLE links, long-document and group editing features, fastest in roundup **CONS:** No image enhancement tools, no text flow between frames

Clearly at the top of its class, *Word for Windows 2.0* adds the charting and graphics tools missing in version 1.1, then dazzles you with exciting new interface touches. It also offers the fastest performance overall. The result is a Best Buy that's not only the most powerful word processor the world has ever seen, but also one of the easiest to use.

An excellent tutorial guides new users through the program, step by step, shortening the learning process. Former *WordPerfect* users also get a hand; they can use their familiar keystrokes while *WinWord* teaches its own, more powerful, system. This transitional help even beats *WordPerfect for Windows'* tools.

Editing in *WinWord* is child's play. You can select text with the mouse, then drag it to a new spot in the document for the easiest text moves ever. Only *WinWord* has it. Version 2.0 also adds multiple editing views, including a customizable view.

Formatting is also simple; use the menus, style bar, or click on an icon. You can create icons for any command or macro, but the bar isn't movable like *Ami Pro*'s. *WinWord* also has excellent style sheets (now saved separately), and you can set columns and margins by dragging markers on the ruler.

One of the handiest new features is a unique envelope-printing icon that grabs addresses, then sends them to the printer. An equation editor similar to *Ami Pro*'s lets you pick symbols from a chart, then paste them into the document. A similar tool inserts foreign language and symbol characters. Font sizes, however, are limited to 127 points maximum. That sounds like a lot, but it's only about an inch and a half—not enough for desktop publishers doing special headlines and ad type.

Printing gets a boost with fine support for font-scaling software. As with *Legacy*, you can print landscape and portrait pages in the same document. Graphics tools now include drawing and charting modules, plus *WordArt*, which lets you rotate, shade, and shadow text, or bend it around curves.

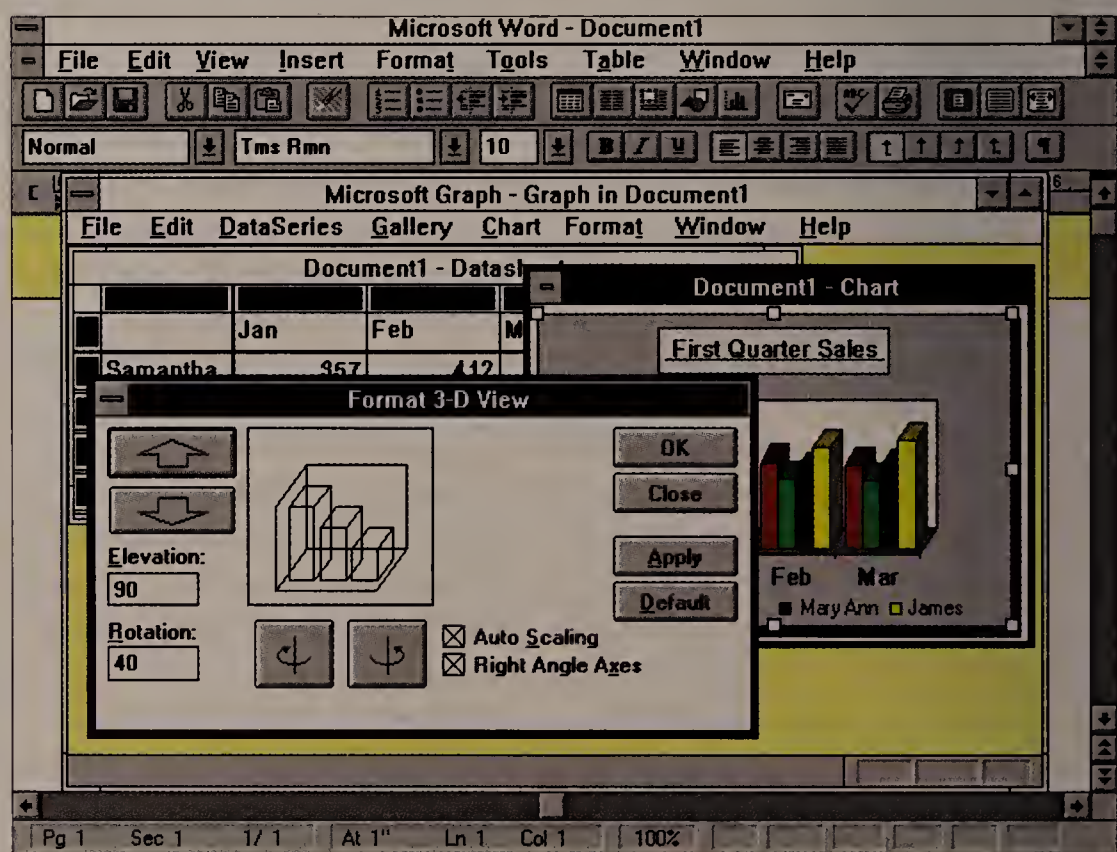
Group edited and long documents benefit from an outstanding, all-inclusive outliner. Indexing, tables of contents, cross-references, and footnotes work seamlessly, and you get a complete set of group-editing tools, as well. Document management is superb, with complete text searching tools and document summaries. You can even preview text and graphics files, saving valuable time when hunting for the right graphic or text file. Like *Ami Pro*, the program offers flawless OLE links for *Excel* and other OLE-capable programs by double-clicking on a screen object. Corporate programmers will love *WinWord*'s powerful macro language, as well as its automated templates, which help make forms come alive with prompts and cross-references.

If you do mass mailings, *WinWord* is the answer. It not only offers the most sophisticated mail merge, it's also the easiest. *WinWord*'s prompts lead you through data file selection, including native *dBASE III* files, then help you select fields and conditional commands and preview before printing.

Select text with the mouse, then drag it to a new spot for the easiest text moves ever.

Desktop publishing features work well, too. You get automatic bulleted lists, variable-width columns, plus leading, kerning, and tracking controls. *Legacy*'s linked text frames and automatic dropped capitals are missing.

Whatever your word processing chores, you'll hit the mark with *Word for Windows 2.0*. *Ami Pro*'s handling of scanned images is superior to *WinWord*'s, but overall *WinWord*'s power and ease of use make it your Best Buy.



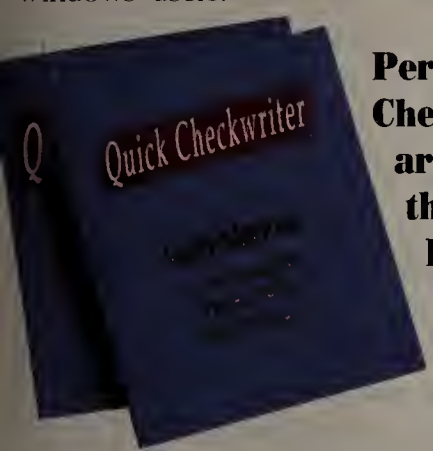
Word for Windows 2.0 includes a powerful business graphics module that can even rotate graphs to give you a completely different perspective.

DacEasy® Instant Accounting.™

It's More Than Too Little And Less Than Too Much.

No longer are you forced to choose between a personal finance program that's short on business features and a "full-featured" accounting package that's way too much software for your small-business needs.

New, DacEasy Instant Accounting is the perfect entry-level business accounting alternative for DOS and Windows™ users.



Personal Checkwriters are Short on the Business Features You Need

It's Easy to Use, But All Business. The business oriented transaction screens in DacEasy Instant Accounting look just like familiar paper forms and checks, so you will instantly feel right at home.

To quickly create an invoice, you simply pull customer information from your Instant Accounting Customer Ledger, plug in items from your inventory or services list, and let DacEasy Instant Accounting calculate the taxes and totals. You can print your invoices on your dot-matrix or laser printer one at a time, or save them for batch printing at your convenience.

And it's just as easy to print computer checks and track handwritten checks, too.

Plus, you can record deposits and other bank transactions, and reconcile bank accounts in minutes when your bank statement arrives.

With the DacEasy Twin Interface, You Get Windows and DOS Versions in One Box for Just $49.95! If you use character-based DOS now, but plan to switch to Windows later, or you use Windows at the office and DOS at home, you'll only need to buy one program, DacEasy Instant Accounting.

Regardless of the version you use, your screens will look the same and you'll use virtually the same keystrokes. That's the DacEasy Twin Interface.

DacEasy Instant Accounting has the Small-Business Reports You Need Without the Big-Business Complexity You Dont Need. Creating timely and comprehensive financial reports is easy with DacEasy Instant Accounting.

You can build a budget, and instantly compare your company's actual performance to your budget. Or you can print a Profit and Loss report to see how much money you're making. And you can produce customer history and status reports, a variety of sales related reports, and a balance sheet to make sure everything adds up.

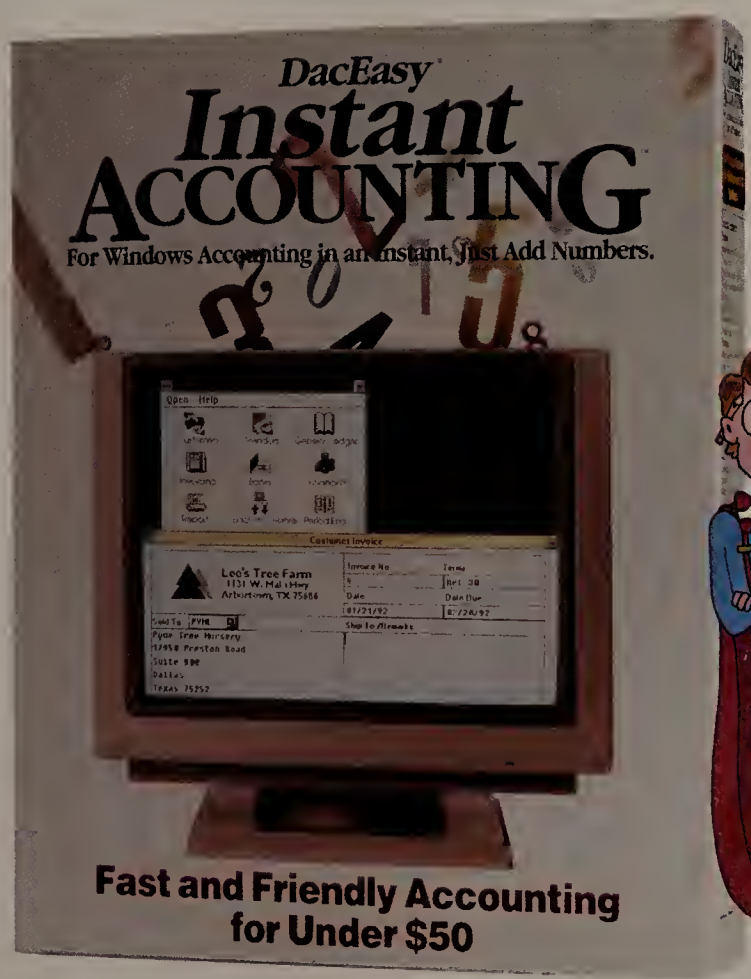
Big Business Accounting Programs Are More Than You Need

DacEasy Instant Accounting also helps you stay in touch with customers and vendors with built-in search, mail-merge and fax transmission support. It even has a built-in phone dialer.

For DOS or Windows business accounting you can use in an instant, get DacEasy Instant Accounting.

For more information, or to order DacEasy Instant Accounting, see your local software dealer, or call DacEasy today.

DacEasy Instant Accounting is Just Right for Your Small-Business Needs.



1-800-DAC-EASY
In Canada call 416-940-3314
17950 Preston Road, Suite 800
Dallas, Texas 75252

$49.95

Includes Both Windows and DOS Versions

Media Code: PCW

Hardware Requirements: IBM or Compatible PCs, 640K Ram (1 MB with Windows), a hard disk drive, DOS 3.1 or later, Windows 3.0 or later (optional). Monochrome, CGA, EGA and VGA monitors. Mouse optional.

Windows is a trademark of MicroSoft. DacEasy Instant Accounting is a trademark of DacEasy, Inc. ©copyright 1992. All Rights Reserved.

Circle 70 on reader service card

See us at COMDEX/Windows World, Booth # W820, McCormick Place

The Finest Twenty-Inch Color Monitor You Never Heard of...

Is Also The Best Valu

Conventional color monitors pale by comparison to SAMPO's technically-advance AlphaScan LS. It's autosync capability, from 30KHz to 67KHz, guarantees compatibility with virtually an graphics card, from VGA to 1280 x 1024 resolution or MAC 640 x 480 to 1024 x 768. The AlphaScan LS further transcends the conventional with its Invar Shadow Mask technology for increased brightness and contrast, while Dynamic Beam Focusing sharpens text and graphics, even in the far corners of the screen.

SAMPO recognizes that CAD/CAM users are the most discerning and demanding. Ergonomics are of critical importance. So we created th AlphaScan LS with a fully-functioning tilt-swivel base and a antiglare screen, and with all operator controls, including horizontal and vertical centering, ergonomically oned on the front of the monitor.

The Best Monitors at the Best Prices.

For years, SAMPO has been dedicated to making the best quality monochrome and color displays, at the most fiercely competitive prices. Now, in keeping with this tradition, we are offerin twenty-inches of the best CAD/CAM performance at the best possible pric

To discover the SAMPO Reseller Advantage, please call:

(404) 449-6220

See us at
COMDEX/SPRING '92
Chicago
BOOTH 465/East Hall

SAMPO
A M E R I C A
THE BEST MONITORS YOU NEVER HEARD OF.
5550 Peachtree Industrial Boulevard
Norcross, Georgia 30071, U.S.A.

©1991 SAMPO AMERICA. All rights reserved. All trademarks, products or services are trademarks or registered trademarks of their respective owners.

Circle 255 on reader service card

WordPerfect 5.1 for Windows

PROS: Easy to use, shares file formats with WordPerfect 5.1, can use WordPerfect 5.1 keystrokes **CONS:** Only one graphical editing view, no drawing or charting, difficult mail merge, no macro language documentation, no font matching in preview

Is *WordPerfect for Windows* the best *Windows* word processor? No. Both *Ami Pro* and *Word for Windows* are better. Is it the best for *WordPerfect* users? Maybe. But only if you don't need charting or drawing, and if your graphics handling, desktop publishing, and mail merge needs are limited. *Word for Windows* has the edge in all these areas, is easier to use, and gives optional *WordPerfect* keystroke compatibility to boot. Still, *WordPerfect for Windows* should be a popular upgrade. It drapes an easy-to-use interface on a capable feature set that's almost identical to *WordPerfect 5.1* for DOS, plus you get WordPerfect's legendary support.

WordPerfect users are in for an eye-opening change with the flashy icon-based interface, but there's still enough familiar furniture to help you get your bearings. If you're switching from the DOS version, you can use most of your old keystrokes. You can also convert simple macros, and the program shares file formats with *WordPerfect* so there's no extra file conversion chores.

Unlike *Word for Windows*, however, you don't get instructions on the *Windows* interface as you work, and there's no on-line tutorial. There is, however, an excellent help system that lets you point at any screen object to pop up immediate context-sensitive help. All in all, the program is pretty easy to use—you get plenty of keyboard shortcuts, and a movable icon bar holds a customizable set of icons showing pictures, text, or both. As with *Ami Pro*, you can add icons for your macros or commands. If you're not a *WordPerfect* devotee, however, you may find the menu logic a bit faulty. For example, when setting up user preferences, you won't find a one-stop dialog box as in *WinWord*—you set each item in different menus.

You're limited to just one graphical editing view, but noneditable print previews offer several magnifications. Unfortunately, previews don't display your actual fonts and don't reflect the true appearance of your printouts.

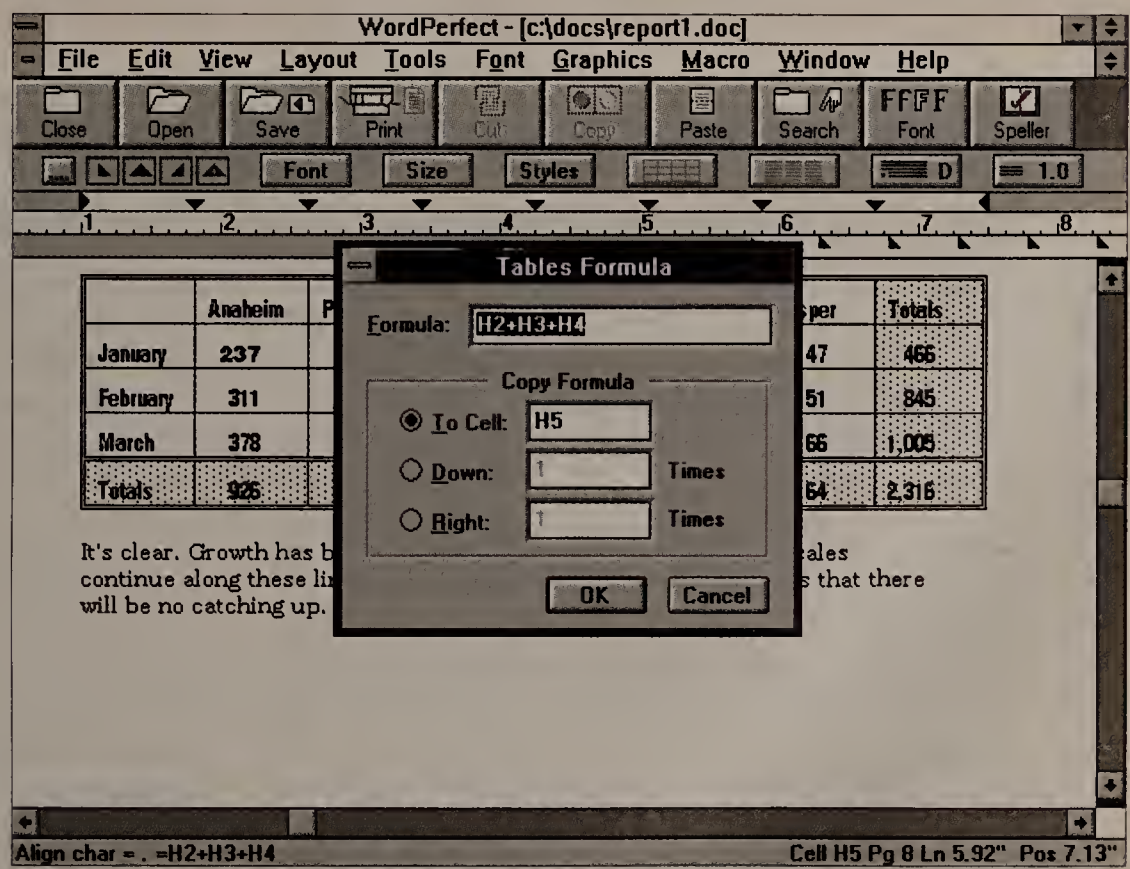
Formatting is fairly easy. One style per file is stored, which complicates template creation, but a pulldown list makes selection easy. There are no sample styles or templates, but you can move column, tab, and margin markers. Unlike half the programs here, *WordPerfect for Windows* has an equation editor. It's usable, but can't hold a candle to *WinWord* or *Ami Pro*. You also get a collapsible outliner, but it's limited.

Work group and long-document tools are as good as *Winword*'s, and bookmarks, cross-referencing, and master-document tools are equal to any of these programs. Work groups will like the powerful redlining, annotation, and revision tracking tools, and the file manager is so good you may want to run it as a separate application to control all your *Windows* files.

When you dig deeper, however, you come up empty. The macro language is less powerful than *WinWord*'s, and you'll need the $19.95 macro manual to do programming. *WordPerfect*'s DDE links are one way only, with *WordPerfect* as the client, and there's no OLE support. Mail-merge tools are the same as in the DOS version—clumsy, but powerful. There's no support for native *dBASE III* files and no pick list method for inserting fields in documents.

The desktop publishing tools are barely adequate. Instead of frames, you must choose from graphics, table, and text boxes. And as with the old version, you have to type in the coordinates in a dialog box before you can freely manipulate the box with your mouse. Line and box drawing tools are part of the package, and you can select special graphics-based characters, but there are no complete drawing or charting modules.

WordPerfect 5.1 for DOS users will need to decide how much word processing firepower they need and how important *WinWord*'s file and macro compatibility is. This program is clearly a contender and a good value, but if desktop publishing and mail-merge features are important, you should look elsewhere.



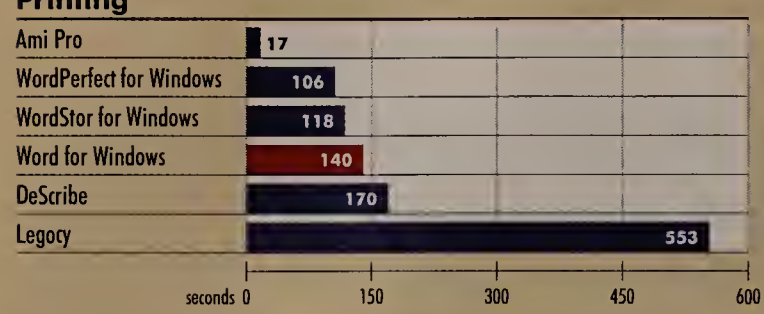
By inserting simple formulas into table cells, you can treat a WordPerfect for Windows table like a mini-spreadsheet. Shading, fonts, and other customized features make your tables stand out.

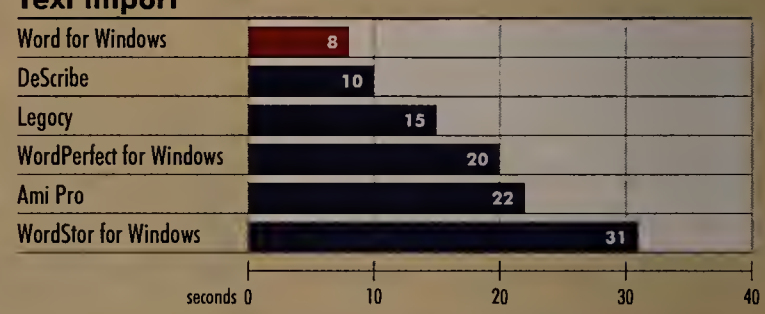
PC WORLD TEST REPORT

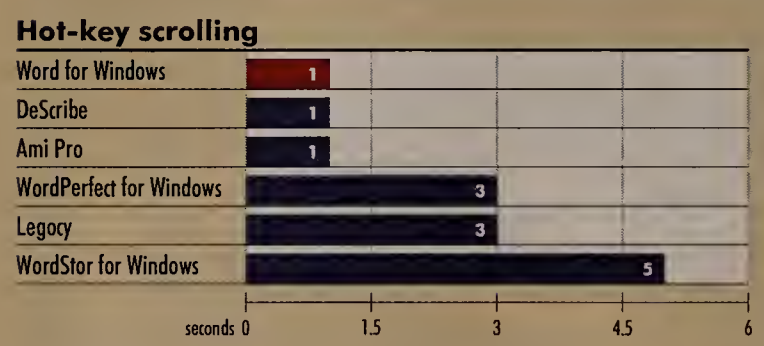
WinWord, Ami Pro Speed Past WordPerfect

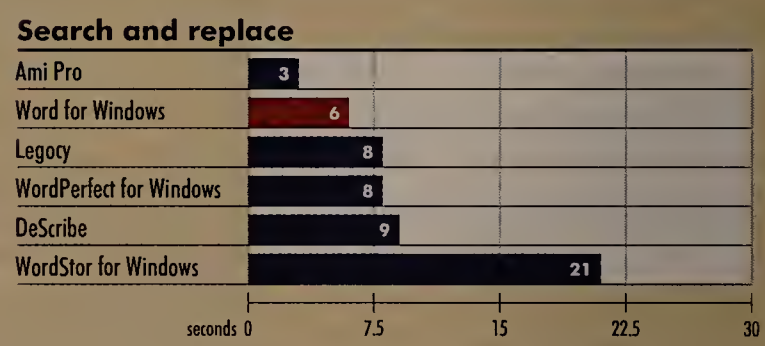
Word for Windows is the fastest program here, turning in solid scores on nearly every test.

BEST BUY









Methodology
Our test platform is a 25-MHz 386 with 8MB RAM, a 200MB hard disk, and 640 by 480 VGA. Test files are printed on an HP LaserJet Series II with 2.5MB of memory. All tests are conducted using *Adobe Type Manager* fonts.

Printing
We print a one-page document containing two text columns and a TIFF image. We record time needed to return cursor control to the user.

Text import
We import a 100K ASCII file and record time until cursor control returns to user.

Hot-key scrolling
We move the cursor from top to bottom of a 100K document using each program's hot-key sequence.

Search and replace
We measure the time needed to search and replace 609 occurrences of a single word in a 100K file.

Data based on tests designed and conducted by PC World Test Center. All rights reserved.

The Executives: Windows Word Processing Bargains

You may not need all the features of a word processing giant like our Best Buy, *Word for Windows 2.0*. If your budget doesn't include the price of a do-it-all program, don't despair; there are plenty of lower priced executive word processors for *Windows 3.0*. Keep in mind that just because a program offers fewer features doesn't mean it's easier. Assuming the interface and other ease-of-use issues are equal, however, fewer features usually means a lower learning curve. Here are the most prominent *Windows* executives:

CA-Textor 1.0

This $225 package features a customizable icon toolbar, along with mail-merge tools that read native *dBASE III* files. Its spelling checker supports English and French, and it offers math features for table calculations. Another plus is a full document summary feature that lets you track revisions.
Computer Associates Int'l, 516/227-3300, 516/227-3937 (fax)
Reader service no. 845

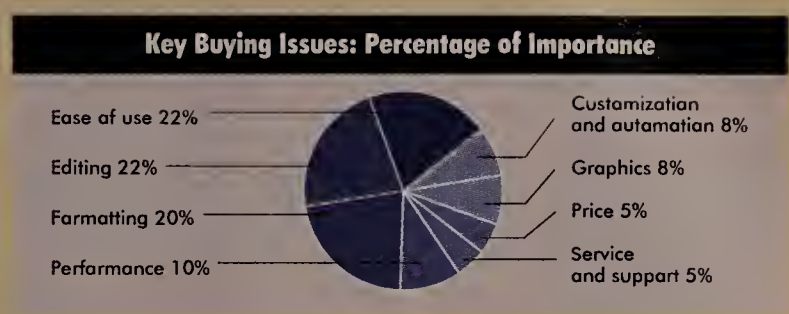
JustWrite 1.0

Selling for only $199, Symantec's *JustWrite* offers excellent speed in a package with most of the essential features. You'll find easy style sheets, DDE links, mail merge, a table editor, plus support for most document and graphics files. If you work with multiple file formats, you'll love *JustWrite*'s capability to recognize and convert most foreign files automatical-

Word for Windows 2.0 Puts It All Together

With potent new editing and graphics features, version 2.0 of Word for Windows is now nearly as adept as Ami Pro, and it's exceptionally easy to use.

Some great choices await in Windows word processing, starting with our Best Buy, **Word for Windows**. Building on a powerful arsenal of editing tools, Microsoft adds improved graphics handling, WordPerfect training wheels, and innovative ease-of-use touches. **Ami Pro** lags only slightly behind, and it's still the best at graphics. Many WordPerfect users will profit from an upgrade to **WordPerfect for Windows.**



Excellent ★★★★
Good ★★★
Fair ★★
Poor ★

	Reader service number	Ease of use	Editing	Formatting	Performance	Customization and automation	Graphics	Price	Service and support	Overall value
Ami Pro 2.0	601	☆☆☆½	☆☆☆½	☆☆☆½	☆☆☆½	☆☆☆½	☆☆☆☆	☆☆☆	☆☆☆½	★★★½
DeScribe 3.0	602	☆½	☆½	☆☆½	☆☆½	☆☆	☆☆½	☆☆☆	☆☆	★★
Legacy 2.0	603	☆☆	☆☆☆	☆☆☆	☆☆½	☆☆½	☆☆☆½	☆☆☆	☆☆☆½	★★★
Word for Windows 2.0	604	★★★★	★★★★	★★★½	★★★★	★★★★	★★★½	★★★	★★★½	★★★★
WordPerfect 5.1 for Windows	605	☆☆☆	☆☆☆	☆☆☆½	☆☆☆	☆☆½	☆☆½	☆☆☆	☆☆☆☆	★★★
WordStar for Windows 1.0	606	☆☆	☆☆☆	☆☆½	☆☆½	☆½	☆☆	☆☆☆	☆☆☆	★★½

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

ly. However, missing features, such as drawing and charting modules and a macro language, separate this bargain from the big names.

Symantec Corp., 408/253-9600, 408/253-4092 (fax)
Reader service no. 846

Lotus Write 2.0

Based on the same engine that drives *Ami Pro 2.0*, this $199 package replaces the original low-end *Ami Pro* package. *Lotus Write* offers many of the same features as its sibling *Ami Pro*, including SmartIcons, OLE links, and E-mail links to *cc:Mail* and *Lotus Notes*. It comes bundled with *Adobe Type Manager*, and offers a $149 upgrade path to *Ami Pro*. You won't find *Ami Pro*'s macros, drawing and charting tools, or long-document features in this lower-priced program.

Lotus Development Corp., 800/831-9679
Reader service no. 847

Pro Write Plus 1.0

Software Publishing's $249 *Windows* word processor is based on an earlier release of *Ami Pro*. It features a grammar checker and direct support for MHS E-mail, letting you communicate quickly with everyone on your NetWare LAN. Multiple editing views, pop-up notes, and easy footnoting add additional power. As with the rest of these programs, though, there are no macro, drawing, or charting tools.

Software Publishing Corp., 408/988-7518, 408/980-0729 (fax)
Reader service no. 848

FEATURES EVALUATION

Windows Word Processors—The New Integrated Packages?

With Word for Windows and Ami Pro, you can chart, draw, and create tables without leaving your word processor.

● Yes ○ No
◒ Deficient
▼ Limited only by available memory

	Ami Pro 2.0	DeScribe 3.0	Legacy 2.0	Word for Windows 2.0	WordPerfect for Windows 5.1	WordStar for Windows 1.0
Standard features						
Price	$495	$495	$495	$495	$495	$495
RAM required (MB)	2	3	1–2	2	4	2
Disk space required/ recommended (MB)	6/11	2/8.25	4/10	5/15	6/12	5/10
Editing						
Basic editing						
Fast-draft mode	●	○	●	●	●	●
Multiple graphical views	●	●	●	●	○	●
Custom views	●	●	●	●	○	●
Maximum windows	9	▼	1	9	9	1
Math functions	●	○	○	●	●	○
Undo levels	4	▼	1	1	3[1]	1
Mouse moves text	◒[2]	○	○	●	○	○
Vertical ruler	●	●	●	●	○	●
Shows recently loaded files	●	●	●	●	●	○
On-line tutorial	○	○	●	●	○	●
Writing aids						
Spelling checker/ thesaurus	●	●	●	●	●	●
Outliner	●	○	◒[3]	●	◒[3]	○
Grammar checker	○	○	●	●	○	●
				BEST BUY		

	Ami Pro 2.0	DeScribe 3.0	Legacy 2.0	Word for Windows 2.0	WordPerfect for Windows 5.1	WordStar for Windows 1.0
Long-document options						
Index/TOC	●	●	●	●	●	●
Bookmarks	●	●	○	●	●	●
Cross-referencing	●	◒[4]	●	●	●	●
Footnotes/endnotes	●	○	●	●	●	●
Master document	●	○	○	●	●	○
Group editing tools						
Annotations	●	○	●	●	●	◒[5]
Redlining	●	○	○	●	●	○
Document summaries/ revision tracking	●	○	●	●	●	○
E-mail support	●	●	○	●	○	○
Formatting						
Basic formatting						
Style sheets	●	●	●	●	●	●
Style by exomple	●	○	○	●	●	○
Conditionol breaks	●	●	○	●	●	○
Uneven columns	●	○	●	●	●	●
Customizable icons	●	●	●	●	●	●
Preview files	○	○	○	●	●	○
Text-format imports	20	32	22	14	15	23
Text-format exports	20	32	19	15	15	23
				BEST BUY		

Stable Characters—Word 5.5 and WordPerfect 5.1

Windows isn't for everyone. If you have an 8088 machine, these *Windows* word processors won't run at all, and they're terminally sluggish on most 286 machines. Even on capable 386 systems, the slight delays caused by screen redraws can drive some users batty.

	Microsoft Word 5.5	WordPerfect 5.1
Mouse support	Yes	Yes
Drop-down menus	Yes	Yes
Page preview	Yes	Yes
Macro language	Yes	Yes
Long-document tools	Yes	Yes
Table editor	No	Yes
Equation editor	No	Yes
Style sheets	Yes	No
Icon-based shortcuts	Yes	No
Outliner includes text	Yes	No

No wonder character-based word processors are still selling well. Michael McCoy, a Washington, D.C.-based software consultant and trainer, says, "*Windows* word processors are far too slow for the day-to-day text entry and editing that I do. The huge bulk of my work is straight text with minimal graphics. When *Windows 3.1* comes out, I'll reevaluate."

If you don't need or want the on-screen formatting power and graphical tools of a *Windows* word processor, take a look at *Microsoft Word* or *WordPerfect*. These mature, $495 programs are by far the best choices in the high-end character-based arena. While *Word*'s interface appeals to many users, *WordPerfect*'s uncluttered screen has helped make it the number one word processor. If you want more information,

	Ami Pro 2.0	DeScribe 3.0	Legacy 2.0	Word for Windows 2.0	WordPerfect for Windows 5.1	WordStar for Windows 1.0
Desktop publishing						
Kerning and tracking	◒[6]	●	●	●	●	●
Special text effects	◒[7]	●	◒[7]	●	○	◒[7]
Text frame linking	○	○	●	●	○	●
Auto drop caps	○	●	●	●	○	●
Printing						
Supports font scaler	●	●	●	●	●	◒[8]
Includes font scaler	●	○	○	●	○	●
Portrait/landscape in same document	○	○	●	●	◒[9]	○
Customization and automation						
Programmable macros	●	●	●	●	●	○
Macro learn mode	●	●	●	●	●	○
Use native dBASE files in mail merge	◒[10]	○	●	●	○	●
Select mail merge fields	●	○	●	●	○	●
Conditional mail merge	●	○	○	●	●	○
DDE links	●	●	●	●	◒[11]	●
OLE links	●	○	○	●	○	○
Table editor	●	●	●	●	●	●
Equation editor	●	○	○	●	●	○
Automated templates	●	○	○	●	○	○
Graphics						
Move, size, crop	●	●	●	●	●	●
Flow text around	●	●	●	●	●	●
Graphics/text frames	●	●	●	●	●	●
Snap-to grid for frames	○	○	●	●	○	●
				BEST BUY		

	Ami Pro 2.0	DeScribe 3.0	Legacy 2.0	Word for Windows 2.0	WordPerfect for Windows 5.1	WordStar for Windows 1.0
Graphics (cont'd)						
Lines, boxes, borders	●	●	●	●	●	●
Drawing program	●	●	●	●	○	●
Charting module	●	○	○	●	○	○
TIFF brightness/contrast	●	○	●	●	○	○
Overlays text on graphics	●	●	●	●	●	●
Graphic-format imports	12	20	11	25	16	10
Support						
Unlimited free support	●	◒[12]	●	●	●	●
Toll-free number	○	◒[13]	●	●	●	○
Daily support hours	11	9	10	12	24	9
On-line support	●	●	●	●	●	●
Fax support	○	◒[14]	●	●	●	○
				BEST BUY		

[1] Three undelete levels but only one undo level on commonds.
[2] One keystroke (<Ctrl>–right mouse button) required.
[3] Does not include document text in outline.
[4] In indexes only.
[5] Displays only in droft mode; is not morked or formatted os a seporate note.
[6] Limited to loose ond tight porogroph text.
[7] Only in seporote drow module.
[8] Adobe Type Manager limited to approximately 80 fants.
[9] Only when running WordPerfect's drivers, not using Windows drivers.
[10] dBASE support not outomotic; requires speciol description file.
[11] One-way DDE anly; WordPerfect must be client opplicotion.
[12] Free for 90 doys.
[13] Only for extro-cast support customers.
[14] Only for customers outside the United Stotes.

check out our June 1991 roundup—neither program has received an upgrade since then.

Microsoft Word 5.5 **PROS:** View bold and italics on screen, Windows-like interface, powerful macros, excellent outliner **CONS:** No table or equation editors

A Best Buy in our last roundup, *Word* offers blazing speed with a *Windows*-like interface. You'll find dialog boxes, graphical page previews, full mouse support, and even icon shortcuts. It handles graphics better than *WordPerfect*, but not nearly as conveniently as *Word for Windows*.

A complete, powerful macro language and style sheets fill out the program's power. Some users will miss *WordPerfect 5.1*'s table and equation editors, but *Word*'s outliner is outstanding, letting you instantly switch between the outline and the full document. If your tasks mainly involve pure text and basic formatting, *Word 5.5* is an excellent choice.

WordPerfect 5.1 **PROS:** Excellent support, fast, clean screen appearance, equation and table editors **CONS:** Unconventional keyboard commands, weak outliner

The most widely used word processing program of all time, *WordPerfect*'s character-based version shares all the power features of *Word 5.5*. It's fast, and the pull-down menus and mouse support added in version 5.1 make it easier to use. WordPerfect also offers superb toll-free technical support, as well as informal support from a legion of users.

Doing Documents With DOS

If you can't—or won't—use *Windows 3.0*, you still have plenty of word processing choices in the character-based DOS world. Most of the action is happening in the low-end executive class. Designed for ease of use, these programs lack advanced features such as macro languages, charting modules, and equation editors, but they fit the bill for busy executives and users with simpler word processing needs.

Not much is shaking in the world of high-end DOS word processors, but *Microsoft Word 5.5* and *WordPerfect 5.1* aren't the only players around (see "Stable Characters—Word 5.5 and WordPerfect 5.1"). Here's a survey of the upper and lower echelons of the character-based scene:

Executive Word Processors for DOS

DacEasy Word 3.0
The lowest-priced executive word processor at $49.95, *DacEasy Word* offers easy menus, plenty of powerful keyboard shortcuts, and excellent on-line help. Formatting tools are limited, though, making the program better suited for simple documents.
DacEasy, 800/877-8088

PC-Write Standard Level
A shareware classic from QuickSoft, the new, $129 *Standard Level* received a major facelift with pull-down menus, multiple windows, context-sensitive help, and mouse support. It also adds import and export filters for a number of programs. Best of all, you can try before you buy—the shareware version resides on many on-line services and BBS's.
Quicksoft, 206/282-0452

PFS:Write 2.0
Spinnaker's $129 executive entry has an edge: You can edit in a graphical view that shows your printed page complete with fonts and graphics. It uses a *Windows*-like interface, with the bundled *Publisher's Powerpak* providing scalable fonts, but you don't need *Windows 3.0*—only DOS. Other tempting features include a clip-art library, *Grammatik*-based grammar checking, and the capability to edit two documents at once.
Spinnaker Software, 800/826-0706

Pro Write 2.2
This $249 character-based version of Software Publishing's *Pro Write Plus for Windows* offers pulldown menus, a grammar checker, a built-in address book, and import tools for major word processors. Printer support includes several font cartridges for laser printers.
Software Publishing Corp., 408/988-7518, 408/980-0729 (fax)

Q&A Write
This $199 executive word processor from Symantec offers easy, menu-driven commands, and specializes at mail merge. But it's weak at formatting. An even more stripped-down version is available on Q&A.
Symantec Corp., 408/253-9600, 408/253-4092 (fax)

High-end Word Processors for DOS

DisplayWrite 5
IBM's $495 word cruncher has a well-deserved reputation for slowness and an awkward interface. But it continues to sell well, based on its huge installed base. It's used primarily for corporate word processing.
IBM Corp., 800/426-7699

MultiMate 4.0
Like *WordStar 6.0*, the $495 *MultiMate*, now a Borland product, has a broad installed base for word processing pools and offers strong group editing tools. Still, its slow operation, confusing interface, and lack of macro capabilities limit its appeal for most users.
Borland Int'l, 800/331-0877

Signature 1.0
This unique new word processor was developed by Xyquest, briefly acquired by IBM, then returned to Xyquest when IBM abandoned its application software efforts. While it uses a *Windows*-like interface, complete with editing views that represent the printed page, it runs under DOS. Like *XyWrite III Plus*, *Signature* offers excellent customization tools and adds an extended foreign language character set, plus a table editor, memo pad, and text and graphics frames for $495. Future versions will run under *Windows* and OS/2.
Xyquest, 508/671-0888

WordStar 6.0
Loyal users keep this $495 character-based legend rolling. Its hands-on-the-keyboard operation makes it a capable editing tool, but formatting is rough. WordStar recently updated the program with a bevy of writing aids, including a grammar checker.
WordStar Int'l, 800/344-6044

XyWrite III Plus 3.57
A favorite among academicians and professional writers, the $445 *Signature* is notable for its blazing speed, flexible customization options, and handy editing tools.
Xyquest, 508/671-0888

THIS NEWSLETTER WAS CREATED ON LEGACY 2.0 IN JUST 17 MINUTES BY A GUY WITH ONLY 1.5 HOURS EXPERIENCE.

I IMPORTED THIS LOGO AND SCALED IT TO FIT THE FRAME IN A MATTER OF SECONDS

TAKE CONTROL WITH LEGACY

The Word Processor with the most Desktop Publishing

Integrated Graphics

Micrografx™ Drawing Tools

- Rotate Text and Graphics
- Proportional Scaling
- Cropping

Image Processing

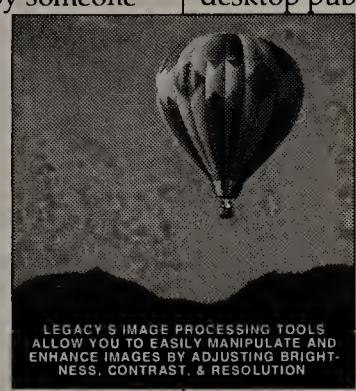
- 256 Color or Grayscale
- Black and White
- Halftones

Import and Edit Images From Popular Graphic Packages

Dynamic Data Exchange

More Word Processing Control

I'll bet you're thinking this newsletter was created by someone with a background in graphics design. No! I'm an average person who learned to use Legacy on my own. The beauty of Legacy is that it's incredibly powerful, yet amazingly easy to learn. In no time, you too will be able to easily create high-impact documents like this.



LEGACY'S IMAGE PROCESSING TOOLS ALLOW YOU TO EASILY MANIPULATE AND ENHANCE IMAGES BY ADJUSTING BRIGHTNESS, CONTRAST, & RESOLUTION

Legacy combines the advantages of a powerful word processor–grammar and spell checker, thesaurus, and macros – with the layout flexibility of a full-blown desktop publisher – extensive typographic control, image processing, and the ability to edit and manipulate imported tables and graphics.

Special effects like this dropped cap are amazingly simple. Just a few clicks of the mouse, using Legacy's pull-down menus and dialog boxes, and there it is, just like you see it here. And Legacy's ability to link frames lets you flow text and tables easily and smoothly from one page to another...(Cont. on page 2)

More Desktop Publishing Control

LEGACY not only allows you to design high-impact documents with ease and efficiency, but also provides a series of templates for common business materials such as newsletters, proposals, reports, and letters.

Importing this table from a spreadsheet program was incredibly easy. Legacy automatically determined the number of rows and columns, so all I had to do was assign a style. No reformatting or rearranging necessary.

As you can see by the table, Legacy is designed to import virtually all existing software formats, so it can easily accommodate and enhance your favorite graphics, spreadsheet, and word processing programs.

LEGACY IMPORTS

TEXT	GRAPHICS
WORD PERFECT	MICROGRAFX
MICROSOFT WORD	COREL DRAW
WORDSTAR	ARTS & LETTERS
DISPLAYWRITE	WINDOWS METAFILE
MULTIMATE	MACPAINT
AMI PRO	LOTUS PIC
MICROSOFT RFT	HARVARD GRAPHICS
SMARTWARE	FREELANCE PLUS
PROFESSIONAL WRITE	DRAW PERFECT
NBI LEGACY	WINDOWS PAINT
WORDSTAR LEGACY	TIFF
DEC DX	PCX
NAVY DIF	HP-GL
ASCII	CGM
DIF	EPS
WK1 & WK2	BMP

INTRODUCING NBI LEGACY 2.0 FOR THE WINDOWS™ ENVIRONMENT.

THE WORD PROCESSOR WITH THE MOST DESKTOP PUBLISHING.

1-800-NBI-1111

CALL TODAY FOR A FREE DEMO.

FOR A LIMITED TIME, TRADE IN YOUR WORD PROCESSOR / DESKTOP PUBLISHER AND GET LEGACY 2.0 FOR JUST $149.

Circle 195 on reader service card

WordStar for Windows 1.0

PROS: WordStar keyboard compatibility, text flow between frames, grammar checker, font-scaling software **CONS:** Awkward interface, no conditional mail-merge commands, difficulty with Adobe Type Manager

WordStar for Windows attempts a starring role at desktop publishing, while offering current *WordStar* devotees the option of using most of their familiar keystrokes. However, it retains many of the shortcomings of the program it was based on—the old version 1.0 of *Legacy*.

An interactive tutorial and good help screens streamline the learning process. Like *Legacy 2.0*, however, *WordStar for Windows* is a bit more difficult to use than most of its rivals. Menus change as you perform different tasks, and when you work with frames, you have to click icons to switch between editing properties and contents.

Unless you choose the optional *WordStar* keystrokes, editing follows normal *Windows* conventions, and you get a variety of views ranging from full page to customized magnifications. Icons provide shortcuts for various formatting elements from fonts to tabs. Style sheets attach to documents, as in *Legacy*. So if you use a set of styles as a template, you must remember to employ the *Save As* command religiously or risk overwriting your template file.

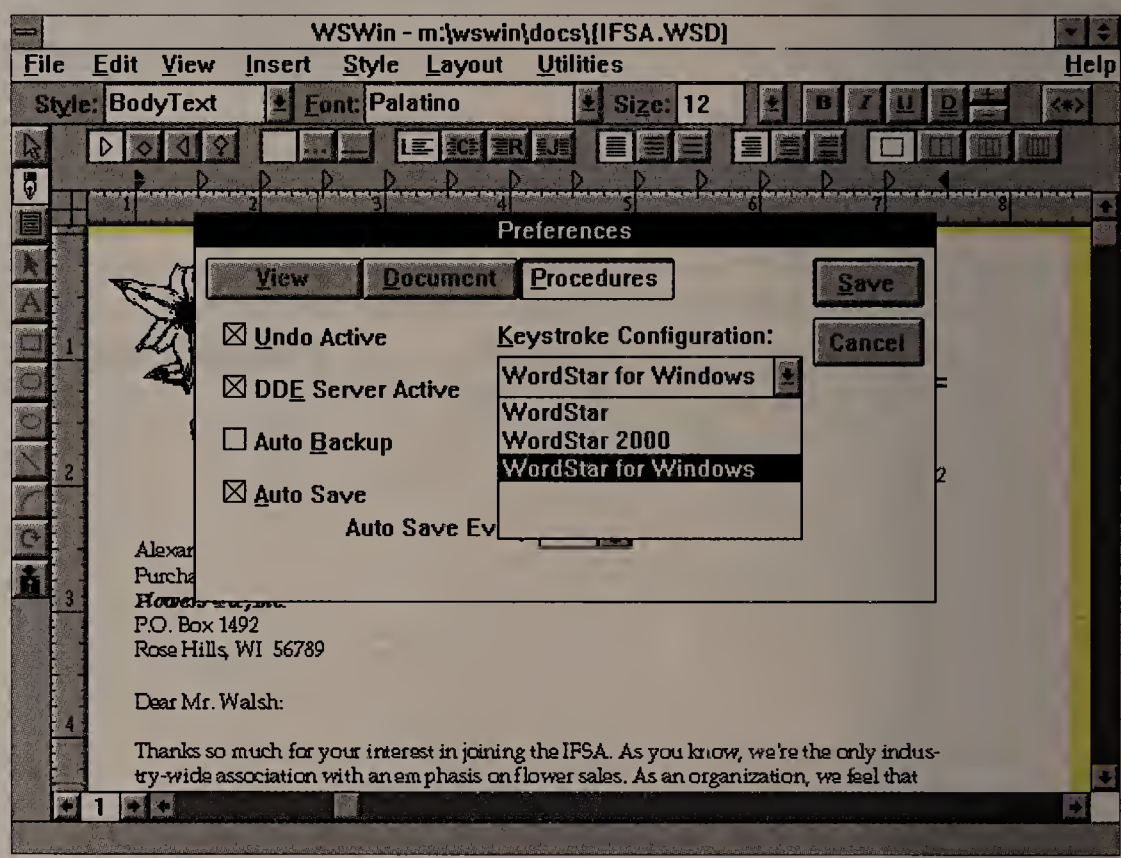
Since *WordStar for Windows* has no group editing tools, work groups will have a tough time assembling documents. Even on your own, long documents can be a struggle. Indexing works, but you can't base your table of contents tools on heading styles. Outlining tools are missing, and there's no master document feature.

Mail-merge letters can use native *dBASE III* data files, and you can pick fields from a list, but there are no conditional commands, which keeps you from using text for different addressees.

Unfortunately, *WordStar for Windows* is devoid of macros, recorded or otherwise. This forces you to use the unreliable *Windows Recorder*, which can only record commands. The program includes Bitstream's *FaceLift* font scaler, but if you opt to use *Adobe Type Manager*, you'll be limited to about 80 fonts; the program won't run with more.

For desktop publishing jobs, you'll enjoy *WordStar for Windows*' drawing tools, snap-to layout grids, and the capability to flow text between linked frames. You'll miss charting, though, and there are no TIFF enhancement controls as in *Legacy* or *Ami Pro*.

Dyed-in-the-wool *WordStar* users may want to use *WordStar for Windows* to keep their familiar keyboard diamond. Most other users will desire a more powerful program.



If you're a WordStar or WordStar 2000 loyalist, you can hang on to your old keystrokes, including the famous WordStar cursor-control diamond.

WHERE TO BUY

Ami Pro 2.0
Lotus Development Corp.
5600 Glenridge Dr.
Atlanta, GA 30342
404/256-2272,
404/851-0007
LIST PRICE: $495; upgrade: for Ami Pro purchased after March 1, 1991 $49, Ami Pro upgrade $99
Reader service no. 601

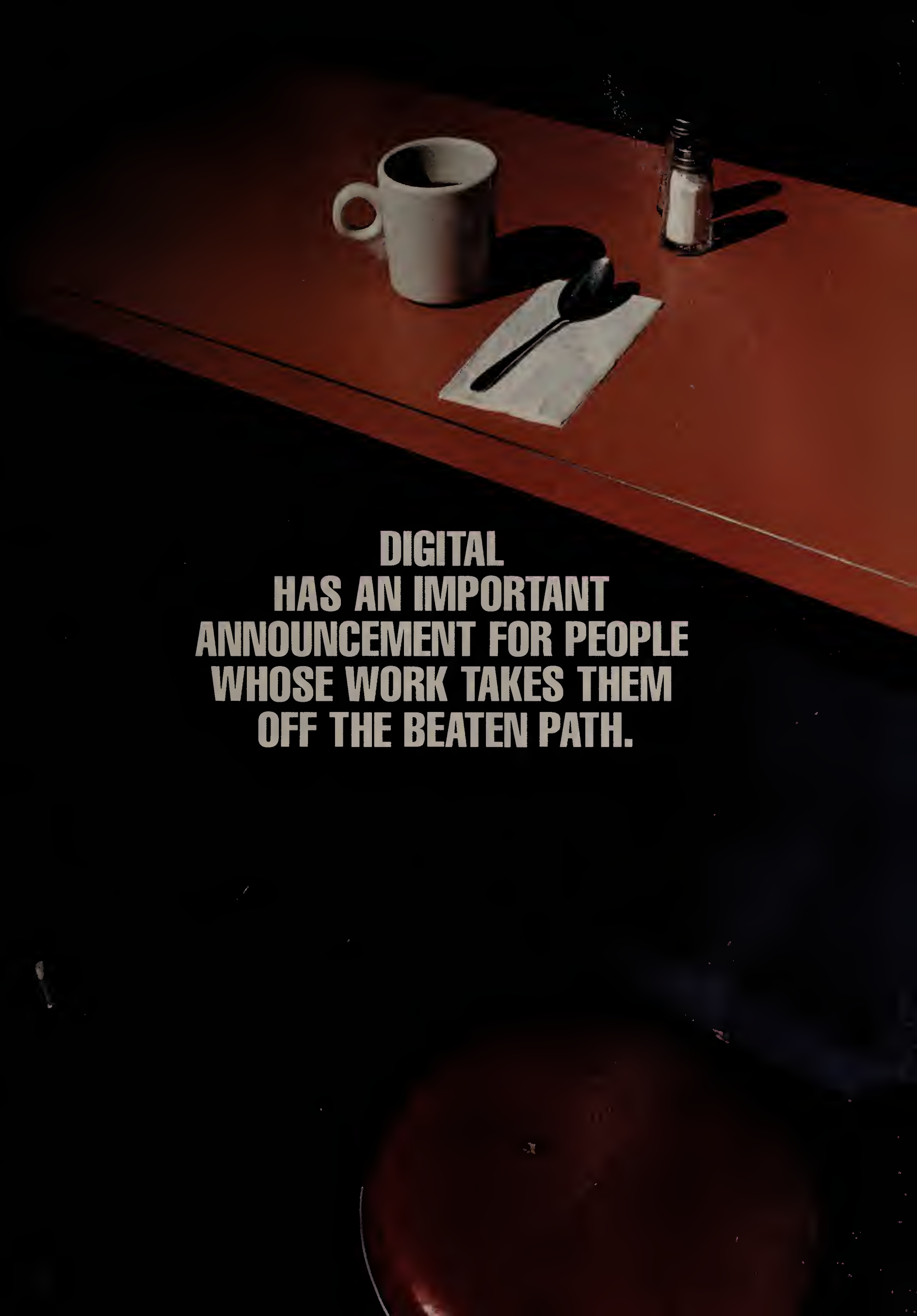
DeScribe 3.0
DeScribe, Inc.
4047 N. Freeway Blvd.
Sacramento, CA 95834
916/646-1111,
916/923-3447 (fax)
LIST PRICE: $495; upgrade: free (documentation upgrade costs $90); if previous version purchased before August 1, 1991 $50
Reader service no. 602

Legacy 2.0
NBI, Inc.
3375 Mitchell Ln.
Boulder, CO 80301
800/624-1111,
303/440-9168 (fax)
LIST PRICE: $495; upgrade: $129
Reader service no. 603

Word for Windows 2.0
Microsoft Corp.
One Microsoft Way
Redmond, WA 98052-6399
800/426-9400,
206/882-8080
LIST PRICE: $495
Reader service no. 604

WordPerfect 5.1 for Windows
WordPerfect Corp.
1555 N. Technology Way
Orem, UT 84057
800/451-5151,
801/225-5000
LIST PRICE: $495; upgrade from WordPerfect for DOS $99
Reader service no. 605

WordStar for Windows 1.0
WordStar Int'l, Inc.
201 Alameda del Prado
Novato, CA 94948
800/344-6044,
415/382-8000
LIST PRICE: $495
Reader service no. 606


DIGITAL
HAS AN IMPORTANT
ANNOUNCEMENT FOR PEOPLE
WHOSE WORK TAKES THEM
OFF THE BEATEN PATH.

WE'LL BE THERE WHEN YOU GET THERE.

Desktop Direct from Digital™

With Desktop Direct from Digital, you're never alone on the road. A support team of 10,000 stands behind every i386™-based, 20MHz DECpc™ 320P Notebook Personal Computer. Wherever you are, we're just a free phone call away.

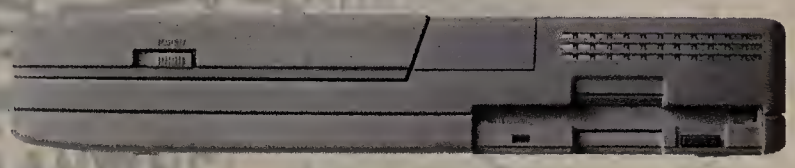
So whether you need help running Windows™ in a Wisconsin coffee shop or advice on connecting a modem in a midtown Manhattan hotel, give us a call. If we can't solve your problem over the telephone, we'll send you a repaired system—even on the road—within 48 hours. Even in the unlikely event that your disk drive goes down in Des Plaines or your keyboard comes loose in Kalamazoo.

Think of it as travel insurance for your notebook computer.

Wherever you go, you won't miss any connections with the DECpc 320P Notebook. That's because the 320P comes *standard* with a 2400 baud modem so you won't get behind in answering your MCI Mail®—or get cut off from your company database.

And at $1,995 the DECpc 320P Notebook is *priced* to go. Fast.

We put it all on the table. The 20MHz DECpc 320P Notebook Personal Computer is the most comfortable to use on the market today, while the components inside are the hottest. We started with the Intel™ 386sx™ processor and the built-in 2400 baud modem (optional data/FAX modem). Because we don't believe you should have to sacrifice power for portability.



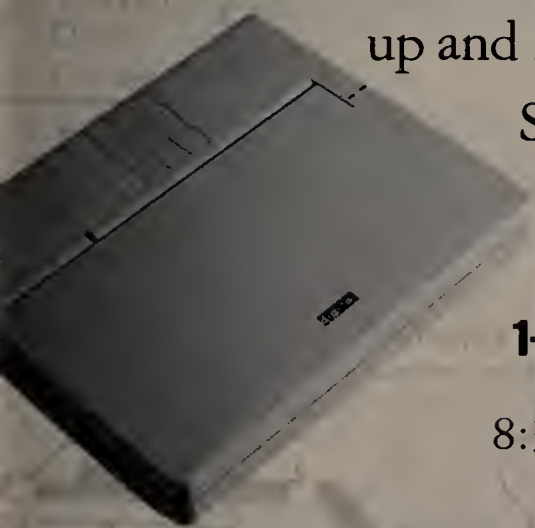
Next, we made the standard 2MB memory expandable to 8MB—plenty of room for running multiple Windows applications. For extra oomph in spreadsheet recalcs, we made room for an optional 80387sx™ Math Coprocessor. Then we added a 40MB (optional 80MB) hard drive and a 3.5″ Floppy diskette drive for ample storage—with DOS™ 5.0 and Windows 3.0 pre-installed. We topped off the chassis with the Triple Super Twist (TST) Backlit VGA display—that puts Windows on-screen without an aggravating blur. We built an AC adapter to weigh less than a pound—so it's easy to carry around—*and* we added the Logitech™ TrackMan® Portable, for FREE.

We even included a three-hour plus battery life to keep you up and running even when you're away from it all.

So call Desktop Direct, before you go, anywhere.

DESKTOP DIRECT from DIGITAL

Taking PCs into the world ahead



Call Desktop Direct at

1-800 PC BY DEC (1-800-722-9332)

Please reference ALT when you call.

8:30 am to 8:00 pm (ET) Mon.-Fri.

digital™

Circle 60 on reader service card

LEADER OF

The **DEC**pc 320P Notebook

Includes:

Microprocessor:	Intel i386sx running at 20MHz
Memory:	2MB
Storage:	40MB IDE Hard Disk Drive 3.5" 1.44MB Floppy
Display:	TST Backlit VGA
Modem:	2400 bps Data
Keyboard:	84-key Keyboard
Mouse:	Logitech TrackMan Portable
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0 (factory installed)

(Carrying case included)

Special Package Price **$1,995** NEW LOW PRICE

FR-PCP11-AA

The **DEC**pc 316sx

Includes:

Microprocessor:	Intel i386sx running at 16MHz
Memory:	1MB, 80ns Memory Kit
Storage:	52MB IDE Hard Disk Drive 3.5" 1.44MB Floppy
Resolution Mode:	1024 X 768 SVGA Adapter
Display:	14" Multi-sync VGA Color Monitor
Keyboard:	101-key Keyboard
Mouse:	Three-button Mouse
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0

Special Package Price **$1,749** NEW LOW PRICE

DJ-PC444-05

The **DEC**station 325c

Includes:

Microprocessor:	Intel i386 running at 25MHz
Memory:	4MB, 80ns Memory Kit
Storage:	52MB IDE Hard Disk Drive 3.5" 1.44MB Floppy 1.2" dd Floppy
Resolution Mode:	1024 X 768 SVGA Adapter
Display:	14" VGA Color Monitor
Keyboard:	101-key Keyboard
Mouse:	Three-button Mouse
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0

Special Package Price **$2,179** NEW LOW PRICE

DJ-PC462-04

THE PACKS.

The **DEC**pc 320P Notebook

Includes:

Microprocessor:	Intel i386sx running at 20MHz
Memory:	2MB
Storage:	80MB IDE Hard Disk Drive 3.5″ 1.44MB Floppy
Display:	TST Backlit VGA
Modem:	2400 bps Data
Keyboard:	84-key Keyboard
Mouse:	Logitech TrackMan Portable
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0 (factory installed)

(Carrying case included)

Special Package Price **$2,495**
FR-PCP11-FA

The **DEC**station™ 320sx

Includes:

Microprocessor:	Intel i386sx running at 20MHz
Memory:	1MB, 80ns Memory Kit
Storage:	52MB IDE Hard Disk Drive
Resolution Mode:	1024 X 768 SVGA Adapter
Display:	14″ Multi-sync VGA Color Monitor
Keyboard:	101-key Keyboard
Mouse:	Three-button Mouse
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0

Special Package Price **$1,849** NEW LOW PRICE
DJ-PC443-05

The **DEC**pc 433 Workstation

Includes:

Microprocessor:	Intel i486 running at 33MHz
Memory:	8MB, 70ns Memory Kit
Storage:	40MB IDE Hard Disk Drive 3.5″ 1.44MB Floppy
Resolution Mode:	1280 X 1024 TIGA Adapter
Display:	20″ Color Monitor
Keyboard:	101-key Keyboard
Mouse:	Three-button Mouse
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0

Special Package Price **$4,999** NEW LOW PRICE
Offer Good Thru 3/31/92
DJ-PCW10-02

DESKTOP DIRECT from DIGITAL
Taking PCs into the world ahead

1-800 PC BY DEC (1-800-722-9332)
Please reference ALT when you call.

Circle 60 on reader service card

PUT YOUR PC TOGETHER ON PAPER.

FAX
TOLL FREE TO
1-800-524-5694

and we'll send you a special system recommendation. Or call 1-800-722-9332 and we'll recommend by phone.

DESKTOP DIRECT from DIGITAL

Taking PCs into the world ahead

digital™

i386, 386sx, 80387sx and Intel are trademarks of Intel Corporation. MCI Mail is a registered trademark of MCI Communications Corporation. Windows, and DOS are trademarks and Microsoft and MS-DOS are registered trademarks of Microsoft Corporation. Logitech is a trademark and TrackMan is a registered trademark of Logitech International S.A. Apple is a registered trademark of Apple Corporation. Compaq is a registered trademark of COMPAQ Computer Corporation. AST is a trademark of AST Researchers, Inc. Dell is a registered trademark of Dell Corporation. OS/2 and PC/AT are registered trademarks and Presentation Manager is a trademark of International Business Machines. Q&A is a registered trademark of Symantec Corporation. NetWare is a registered trademark of Novell, Inc. Banyan Vines is a registered trademark of Banyan Systems, Inc. VLSI is a registered trademark of VLSI Design Associates. TOPCAT is a registered trademark of Westinghouse Corporation.

The DIGITAL logo, DECpc, DECstation and PATHWORKS are trademarks of Digital Equipment Corporation.

Circle 60 on reader service card

Your Name _____

Title _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Your Telephone No. _____ Your FAX No. _____

I'd like information on:

- ☐ DECpc i386 and i386sx based systems
- ☐ DECpc i486 and i486sx based systems
- ☐ The DECpc 320P Notebook
- ☐ The Catalog

Customization Worksheet

Your base system is a: ☐ 286 ☐ 386 ☐ 486 ☐ Other

How many applications will your PC(s) run in a typical workday? _____

What best describes the type of work the system will be used for? (Check all that apply)

- ☐ Word Processing
- ☐ Order-entry
- ☐ Database (filing records)
- ☐ Financial Calculations
- ☐ Retail Store Management
- ☐ Desktop Publishing
- ☐ Education
- ☐ Design (CAD/CAM)
- ☐ Engineering
- ☐ Industrial Process Control
- ☐ Scientific Research
- ☐ Software Development
- ☐ E-Mail
- ☐ Other industry-specific applications (please specify)

How many people work in your group, department or small business?
☐ Less than 10 ☐ 10-20 ☐ 20-35 ☐ More

Is your operating system:
☐ DOS ☐ DOS with Windows ☐ OS/2 ☐ MAC ☐ UNIX™ ☐ Other

Which of the following graphics-oriented applications best describes your needs? (Check all that apply)

- ☐ Desktop Publishing
- ☐ CAD/CAM
- ☐ Realtime Modeling
- ☐ Animation
- ☐ Image Processing
- ☐ AutoCad
- ☐ Business Graphics

LAN Communication

How many PCs do you have installed? _____ From how many manufacturers? _____

What kinds of connections does your PC(s) require? (Check all that apply)

- ☐ Links with other PCs in the immediate surroundings
- ☐ Connection to the local area network (LAN) throughout a building
- ☐ A line to a host system in a remote location

What kind of media (cable) is used in your LANs today? _____

What is the networking software now being used in your company? _____

What kind of host system will your PC communicate with?
☐ DEC ☐ IBM ☐ Other _____

What Kind of Service Do You Really Need?

☐ On-site Hardware Support ☐ Software Support ☐ Telephone Support
☐ Training ☐ FAX Hotline

How many of your users take portables on the road? _____

Do you currently have a service contract(s) for your PCs? ☐ How many? _____

1-800 PC BY DEC (1-800-722-9332)

Please reference ALT when you call.

MAIL-ORDER 386 SYSTEMS

BY JOHN WALKENBACH

Everyone knows you can't get any cheaper than mail order, but these days, support and service may also beat dealers' offerings. One hundred new 33-MHz systems are only a phone call away.

The natives are restless—you can look across the office and see them struggling, their underpowered PCs straining under new graphical applications. Each day the requests for more powerful 386 machines grow louder, but what can you do? With cost cutting directives coming every day, your hands are tied, right?

Perhaps not. In ever-growing numbers, PC buyers are turning to mail order. In a recent survey, 25 percent of *PC World* subscribers indicated their companies were likely to purchase systems by mail order in 1992, and the figure jumped to 48 percent for personal purchases. To cash in on incredible savings in the current economy, buyers are willing to take the small risks involved in buying a system sight unseen from an often unknown vendor. These days you can set up a workstation with a speedy RAM-packed 33-MHz 386 for around $2000, less than you'd pay for a 386SX from Compaq or IBM.

DANIEL PELAVIN

In the past, mail order was strictly for buyers who liked to live on the edge: Dubious merchandise, suspect support, and fly-by-night companies waited like sharks among the shoals. But times have changed, and today there's not much difference in quality from a dealer or a mail-order vendor. Problems, when they occur, tend to surface either in the first couple of months, when the warranty still obtains, or toward the end of the four-to five-year life cycle, when the system is probably obsolete anyway.

Mail-order service and support used to be a joke, but in the nineties, mail-order firms often give you free or low-cost on-site service. Also, the telephone support personnel are often more knowledgeable about their systems than a dealer sales rep who has to keep up-to-date on a number of vendors' products.

But the best news about mail order is the old news: bargain-basement prices. With the savings, you can equip each PC with extras like more RAM, enhanced video, and additional software. There are still some mail-order horror stories out there, but as long as you follow a few basic rules and resist the deals that seem too good to be true, your initial mail-order experience may be just the first of many. (See "Buyer Be Prepared: Mail-Order Checklist" for tips on making a safe, satisfying mail-order purchase.)

386/33S: THE MORE THE MERRIER

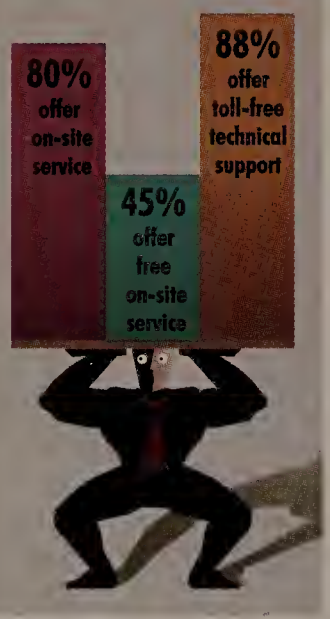
In this buyers' guide, we've focused on 33-MHz 386 systems simply because this class of system offers the best performance for the money. The reason is twofold: Because there's a huge number of vendors selling 386/33s, the competition drives the price down, and because Intel is trying to phase out the 386 line with the help of the 486SX chip, lower prices on 486SX systems force the price of 386/33s down even further.

Many of the mail-order vendors listed here also sell 20-MHz 486SX systems. Although those newcomers run about 30 percent faster than the 386/33s, their prices run about $500 to $1000 higher. Many of the same vendors also sell slower 25-MHz 386 systems, but the price difference is often only a few hundred dollars.

We found no fewer than 100 mail-order 386/33 systems, and that was only by limiting our list to companies that offer at least on-site service, toll-free technical support, or weekend support. We priced systems with a minimum configuration of 4MB RAM, 1.2MB or 1.44MB floppy drive, 80MB to 125MB hard disk, one parallel and two serial ports, VGA card and color monitor, 101-key keyboard, mouse, and DOS 3.3 or later. The average price of the systems listed here is $1823—they range from $1120 (Netis Technology) on up to $2898 (Dell Computer).

Because all these systems are sold direct, the price listed in our table is pretty much the price you'll pay (plus shipping and sales tax, if applicable). Prices continue to drop, however, and will probably be even lower by the time you read this. On top of that, savvy mail-order buyers aren't afraid to do a little haggling. The recession's hitting everyone, and many companies will forgo a few bucks of profit rather than lose a sale. If they won't budge on the price, maybe they'll toss in a free modem or a complimentary copy of *Windows*.

Mail-Order Companies Show Up Strong on Support



These figures from the product table show why customers are no longer afraid to shop by mail.

KICKING THE TIRES FROM AFAR

One thing missing from mail order is the personal contact—you can't look a dealer rep in the eye and ask for a hands-on demonstration. So it's vital you know exactly what you're looking for. Fortunately, more and more extras are now standard on even the smallest, most obscure clones. For example, every 386DX listed in the table accepts standard SIMMs for adding RAM, and surprisingly, all let you add at least 16MB of fast RAM, plenty for today's applications. Most of the systems offer a convenient ROM-based setup utility, all have tilt-and-swivel monitors, and all sport at least one parallel and two serial ports.

Another sign of increasing sophistication: 13 of the 386s listed have an IDE interface for the hard disk drive built onto the motherboard. This arrangement not only frees up an expansion slot but also increases drive speed from 10 to 15 percent. For the same reasons, two machines—CompuAdd and Dell—also build their VGA adapters onto the motherboard.

Aside from reading reviews with trustworthy benchmarks, one of the few ways you have to gauge performance is the size and type of RAM cache. A RAM cache is a small amount of fast, expensive static memory that sits between the CPU and system RAM. Using a RAM cache lets manufacturers use slower, cheaper system RAM without losing much performance. RAM cache size varies from 32K to 128K, but more important is how the cache controller works. Ask for memory cache that uses a two- or, even better, four-way "set associative" caching algorithm. Then go for size.

The speed of the hard disk, controller, video board, and other design details also play a part in a system's overall speed. It's difficult to judge video performance from specs alone, but you can get a rough idea of hard disk speed—the shorter the average access time, measured in milliseconds (ms), the faster the drive will usually perform. You'll probably want to avoid drives slower than 25ms. Also, a drive with an IDE, SCSI, or ESDI interface offers a higher maximum through-

put than one with an old-fashioned MFM controller.

All the vendors offer a choice of hard disk sizes. With today's prices, don't bother buying anything less than 80MB. Look for at least a 100MB drive if you run a lot of disk-hogging *Windows* applications, and at least 300MB if you're buying a 386/33 to act as your network file server. Many of these systems offer 1.2-gigabyte drives for heavy-duty network file storage.

Look for plenty of drive bays, especially externally accessible bays, which you'll need for floppy and tape backup drives. At least three accessible and one internal bay should do the trick for a basic business system that includes a hard drive, tape backup, and both 5¼- and 3½-inch drives; if you want to add a CD ROM drive to this mix, you'll want at least four front-accessible bays and one internal bay.

Also pay attention to the number of free expansion card slots on the motherboard, especially if you want to enhance your system with a CD ROM or SCSI drive, a MIDI adapter, a sound card, an internal modem, or a fax board.

About a quarter of these 386 systems offer a CPU upgrade option so you can move up to a more powerful system without scrapping your PC. In some cases, you replace the CPU with a faster chip and move a jumper to speed up the clock, but in most cases the upgrade is an expansion card CPU that converts your 386 into a 33-MHz 486DX. These latter upgrades cost anywhere from $800 to $1750.

MAIL-ORDER SERVICE AND SUPPORT: LOOK BEFORE YOU LEAP

The companies surveyed vary widely in the support they offer. Most have toll-free technical support numbers and extend support after hours—some even 24 hours a day.

A solid service policy is a key factor when buying hardware. While no company warrants products for fewer than 12 months, getting service if something does go wrong is a different story. All these vendors will repair your system during the warranty period as long as you send it back to them, but check to see if the company pays shipping costs. Many have turnaround policies ranging from 48 hours to one week, but these policies are not legally binding; if you can't afford downtime, ask the company if it offers replacement units for lengthy repairs.

You'll probably want on-site service instead of shipping your PC through the mail. While most of these vendors offer on-site service, only 45 percent provide it free—and sometimes only for a year or less. Charges for on-site service are usually under $100, but sometimes they're a percentage of the unit cost, typically from 5 to 12 percent. This can add up if you've treated yourself to an extra the likes of a big-screen monitor or a super-large hard disk.

Make sure you ask very specific questions about service policy. Some companies offer on-site service within a limited distance; others provide it only with volume purchases, usually four or more units.

With most of these systems, you should be very satisfied with the service and support you receive. A mail-order company lives or dies by its reputation, and most will go to extremes to earn your good recommendation.

John Walkenbach is a contributing editor for PC World *and coauthor of the* PC World 1-2-3 for Windows Complete Handbook *(IDG Books, San Mateo, California, 1991). He can be reached on PC World Online (see page 8 for more information).*

Buyer Be Prepared: Mail-Order Checklist

You've decided to save some money and buy mail order. Now how do you keep from getting burned? The majority of mail-order vendors play fair, but even if you buy from a user-friendly vendor, a deal can turn sour unless you're specific about details. By following these tips, you can make your mail-order buy as risk-free as possible.

- ☐ **Read the ads carefully, and prepare a list of questions before you start calling. Set up a spreadsheet for a point-by-point comparison of the various manufacturers you call.**
- ☐ **Write down the name of your salesperson and take copious notes. Don't be afraid to ask questions.**
- ☐ **Be wary of systems priced far below others in their class. Usually these are not fully configured, or they include small hard drives or monochrome monitors.**
- ☐ **Make sure the equipment you order is in stock, and verify the shipping date and cost.**
- ☐ **In case the company goes out of business before you receive the product, your chances of recouping your investment are better if you pay by credit card. But some companies make you pay a surcharge for credit card sales, usually 3 percent. If you plan to pay by credit card, ask about a credit surcharge, and verify that your credit card will not be billed until the merchandise is shipped.**
- ☐ **Understand your rights if you decide to return the equipment. Is there a restocking fee? Who pays return shipping fees?**
- ☐ **Ask about sales tax. If you're purchasing from a company located outside the state to which the unit is being shipped, you should not be charged sales tax.**
- ☐ **When the goods arrive, examine them carefully for signs of previous use, and ensure that they're actually what you ordered.**

MAIL-ORDER 386 SYSTEMS

Manufacturer	Product	Price [1]	Memory cache (K)	Free slots (32/16/8 bit)	Externally accessible/internal drive bays	Largest hard disk option
Aberdeen	AN333C	$1499	64	0/3/2	3/2	430MB
Absec Research	AB 386/33	$1711 [3]	64	0/4/1	5/0	1.2GB
Accel	Nobel 386/33	$1895 [3]	64	2/3/0	2/2	1.2GB
Acma Computers	Acma 386/33	$1995 [3]	64	0/6/2	4/0	1.2GB
American Computer Express	ACE 386-33	$1695 [3,4]	64	0/6/0	3/2	340MB
American Research	ARC 386/33C	$2375	64	0/6/2	3/2	675MB
AMS	AMS 386-33C	$1699 [4]	64	1/4/0	5/2	340MB
Ares Microdevelopment	386-33 Sonic	$2300 [3]	64	1/5/0	3/1	425MB
Arlington Computer Products	ACP 386-33	$1649	32	1/3/1	4/0	211MB
A-Tronic Computer	ATC 386-33	$1395 [3]	64	1/6/1	4/0	200MB
Automated Computer Technology	ACT 386-33C Cache System	$2355	64	1/7/0	3/2	1.2GB
Binary Technology	BTI System 386-33C	$1795 [3]	64	1/5/2	4/1	1.2GB
BitWise Designs	DeskStation Model 333C	$1995	64	1/5/0	4/1	1.2GB
Blackship Computer Systems	BLK 386/33	$1995 [3]	64	1/4/0	3/2	1.4GB
Blue Circle Group	BCG 386/33	$1779 [3]	64	0/4/2	5/0	1.2GB
Blue Dolphin Computers	386DX-33 Cache	$1759 [3]	64	1/5/0	4/1	670MB
Blue Star Computers	Blue Star 386DX-33	$1969 [3]	64	1/4/1	4/1	1.4GB
Bulldog Computer Products	Bulldog 386-33	$1389	128	0/6/2	3/2	700MB
C2 MicroSystems	386/33 Warrior	$1895	64	1/4/0	3/2	1.2GB
CIN	CIN 3033 CSV Enterprise 33C	$1645 [3]	64	0/3/3	4/1	330MB
Club American Technologies	Falcon 333	$2356	64	0/5/0	3/2	1.2GB
CompuAdd Computer	CompuAdd 333	$2715	128	0/4/1	4/0	1.2GB
Compudyne	Compudyne 386/33 DX	$1998	32	0/4/2	3/2	2.4GB
Computer Market Place	Ultra 386-33C	$1799 [3,4]	64	1/4/0	3/2	1GB
Computer Square	Kandu 386-33	$1549 [3]	64	1/6/2	6/0	340MB
CompuTrend Systems	CompuTrend 386-33	$1804 [3,4]	64	1/3/0	3/2	300MB
Comtrade Electronics USA	Comtrade 386/33	$1725 [3,4]	128	1/4/1	4/1	1GB
CTI	386DX/33 CTI	$1350	64	0/7/1	5/0	1.6GB
CUI	Advantage 386-33 CX	$1770	64	0/6/2	4/2	1.2GB
Dataworld	Data 386i-33	$2100	64	2/4/0	3/2	2.5GB
DEICO Electronics	DEICO System 386DX-33	$2584	128	0/5/1	4/1	400MB
Dell Computer	Dell System 333P	$2898	32	0/3/0	2/1	500MB
Destiny Computer	Destiny 386/33	$1399	64	1/3/2	5/0	200MB
Diamond Technologies	DT 386-33	$1644 [3]	64	1/4/1	4/2	700MB
Dynamic Decisions	386-33C	$2170	64	0/8/0	5/0	1.2GB
EPS Technologies	EPS 386-33	$1895 [3]	128	1/4/1	4/2	1.2GB
FastMicro	FastData 386/33	$1868 [3]	64	0/4/2	5/0	1.2GB
First Computer Systems	FCS 386-33	$1699 [3]	64	1/4/1	6/1	660MB
Gateway 2000	Gateway 2000 386/33	$2395 [3,4]	64	1/6/0	3/2	1.2GB
G.C.H. Systems	EiSys 386-33	$1795	64	0/5/0	4/1	200MB
HD Computers	HD386-33C	$1545	64	1/6/1	6/0	1GB
High Quality Systems	HIQ 333 DX	$1599 [3]	64	0/3/3	5/0	650MB
High Tech Supply	HTS 386 Deluxe System	$1620 [3]	64	1/5/1	4/1	200MB
Insight Computer	Insight 386-33 Cache	$1895 [3,4]	64	0/6/0	5/0	4GB
Intelec	INT 386-33	$1789 [3]	64	1/4/1	4/2	245MB
international Data Systems	IDS 333i	$1985 [3]	64	1/5/0	3/2	2GB
International Instrumentation	Blue Max 386/330	$1797	64	1/4/2	3/3	1.6GB
Iverson Computer	Iverson 386/33	$1629	64	1/4/0	4/2	1.2GB
JCC Systems	JCC 386-33	$1739 [3,4]	64	1/4/2	4/0	1.2GB
Kenosha Computer Center	KCC 386-33	$1749	64	0/6/1	4/0	1.2GB

[1] Price based on 4MB RAM, 1.2MB or 1.44MB floppy drive, 80MB to 120MB hard disk, one parallel and two serial ports, VGA controller and color monitor, 101-key keyboard, mouse, and

Fast-RAM capacity (MB)	Upgrad-oble CPU	Switch-less setup	Compact foot-print [2]	Front-panel on/off switch	Front panel reset	IDE connect-or on moth-erboard	Warranty (months)	On-site service	On-site service less than $100	Free on-site service	Toll-free technical support	Daily support hours	Weekend support	Technical support BBS/fax	Reader service number
64	Y	Y	Y	Y	Y	N	12	N	N	N	Y	9	N	N/Y	639
32	N	Y	Y	Y	Y	N	24	Y	Y	Y	Y	11	Y	N/N	640
32	N	Y	N	Y	Y	N	24	Y	Y	N	Y	8.5	Y	N/Y	641
32	N	Y	Y	N	Y	N	12	Y	Y	Y	Y	11	Y	Y/Y	642
32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	10	Y	N/Y	643
32	N	Y	N	Y	Y	N	12	Y	Y	N	Y	11	N	N/Y	644
16	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	N	N/Y	645
64	N	Y	N	Y	Y	N	24	Y	Y	Y	Y	24	Y	N/Y	646
32	N	Y	N	N	Y	N	12	Y	Y	Y	Y	8	N	N/N	647
25	N	Y	Y	Y	Y	N	12	Y	Y	N	N	8	Y	N/N	648
32	N	N	N	Y	Y	N	12	Y	Y	Y	Y	10	Y	N/Y	649
64	Y	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	Y	N/Y	650
32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	10	Y	N/Y	651
32	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	N	N/Y	652
32	N	Y	Y	Y	Y	N	24	Y	Y	N	Y	11	Y	N/N	653
64	Y	Y	Y	Y	Y	N	12	N	N	N	Y	12	Y	N/N	654
32	Y	Y	Y	Y	Y	N	12	Y	Y	N	Y	24	Y	N/Y	655
16	N	N	N	Y	Y	Y	12	Y	Y	Y	Y	9	N	N/Y	656
64	N	Y	Y	Y	Y	N	12	Y	Y	Y	N	10	N	N/N	657
32	Y	Y	Y	Y	Y	N	12	N	N	N	Y	8.5	Y	N/Y	658
64	Y	Y	N	N	Y	N	12	Y	Y	Y	Y	12	N	N/Y	659
32	N	Y	N	N	N	Y	12	Y	Y	N	Y	11	N	Y/Y	660
16	N	Y	Y	Y	N	Y	12	Y	Y	Y	Y	8	N	Y/Y	662
32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	10	Y	Y/Y	663
32	N	Y	Y	Y	Y	N	12	N	N	N	N	10	Y	N/Y	664
32	N	Y	Y	N	Y	N	12	Y	Y	Y	Y	8.5	N	N/N	665
32	Y	Y	Y	Y	Y	N	12	Y	Y	N	Y	12	Y	N/Y	666
32	N	N	Y	Y	Y	N	12	Y	Y	N	N	9	Y	Y/Y	667
32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	9	N	Y/Y	668
40	N	Y	N	Y	Y	Y	12	Y	Y	Y	Y	11	Y	Y/Y	669
32	Y	Y	Y	Y	Y	Y	12	Y	Y	N	Y	10.5	N	Y/N	670
16	Y	Y	Y	Y	N	Y	12	Y	Y	Y	Y	15	Y	Y/Y	671
32	N	Y	Y	Y	Y	N	12	Y	Y	N	N	7	N	N/N	672
32	N	Y	Y	Y	Y	N	24	Y	Y	N	Y	9	N	N/Y	673
32	Y	Y	N	Y	Y	Y	12	Y	Y	Y	Y	8	N	N/N	674
64	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	12	Y	Y/Y	675
32	N	N	N	Y	Y	N	12	Y	Y	Y	Y	9	Y	Y/Y	676
32	Y	Y	N	Y	Y	N	24	Y	Y	N	Y	8	Y	N/Y	677
64	N	Y	N	Y	Y	N	12	Y	Y	Y	Y	18	Y	Y/Y	678
32	N	Y	Y	Y	N	N	24	Y	Y	N	Y	10	N	N/Y	679
32	N	Y	Y	Y	Y	N	24	Y	Y	N	Y	9.5	Y	N/N	680
64	N	Y	Y	Y	Y	N	24	Y	Y	N	Y	11	Y	N/N	681
32	N	Y	Y	Y	Y	N	12	N	N	N	Y	9	Y	N/N	682
64	N	Y	N	Y	Y	N	12	N	N	N	Y	15	Y	Y/Y	683
32	N	Y	N	Y	Y	N	12	N	N	N	Y	9	Y	N/Y	684
32	Y	Y	Y	Y	Y	N	12	Y	Y	N	N	9	Y	N/Y	685
32	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	Y	Y/Y	686
16	N	Y	N	Y	Y	N	12	Y	Y	Y	Y	10.5	N	N/N	687
16	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	8	N	N/N	688
32	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	N	N/N	842

DOS 3.3 or later version. [2] 16 inches wide by 34 inches deep or less. [3] Two floppy drives. [4] 120MB to 160MB hard disk.

MAIL-ORDER 386 SYSTEMS

Manufacturer	Product	Price [1]	Memory cache (K)	Free slots (32/16/8 bit)	Externally accessible/internal drive bays	Largest hard disk option	Fast-RAM capacity (MB)	Upgradable CPU	Switchless setup	Compact footprint [2]	Front-panel on/off switch	Front panel reset	IDE connector on motherboard	Warranty (months)	On-site service	On-site service less than $100	Free on-site service	Toll-free technical support	Daily support hours	Weekend support	Technical support BBS/fax	Reader service number
Aberdeen	AN333C	$1499	64	0/3/2	3/2	430MB	64	Y	Y	Y	Y	Y	N	12	N	N	N	Y	9	N	N/Y	639
Absec Research	AB 386/33	$1711 [3]	64	0/4/1	5/0	1.2GB	32	N	Y	Y	Y	Y	N	24	Y	Y	Y	Y	11	Y	N/N	640
Accel	Nabel 386/33	$1895 [3]	64	2/3/0	2/2	1.2GB	32	N	Y	N	Y	Y	N	24	Y	Y	N	Y	8.5	Y	N/Y	641
Acma Computers	Acma 386/33	$1995 [3]	64	0/6/2	4/0	1.2GB	32	N	Y	Y	N	Y	N	12	Y	Y	Y	Y	11	Y	Y/Y	642
American Computer Express	ACE 386i-33	$1695 [3,4]	64	0/6/0	3/2	340MB	32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	10	Y	N/Y	643
American Research	ARC 386/33C	$2375	64	0/6/2	3/2	675MB	32	N	Y	N	Y	Y	N	12	Y	Y	N	Y	11	N	N/Y	644
AMS	AMS 386-33C	$1699 [4]	64	1/4/0	5/2	340MB	16	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	N	N/Y	645
Ares Microdevelopment	386-33 Sonic	$2300 [3]	64	1/5/0	3/1	425MB	64	N	Y	N	Y	Y	N	24	Y	Y	Y	Y	24	Y	N/Y	646
Arlington Computer Products	ACP 386-33	$1649	32	1/3/1	4/0	211MB	32	N	Y	N	N	Y	N	12	Y	Y	Y	Y	8	N	N/N	647
A-Tronic Computer	ATC 386-33	$1395 [2]	64	1/6/1	4/0	200MB	25	N	Y	Y	Y	Y	N	12	Y	Y	N	N	8	Y	N/N	648
Automated Computer Technology	ACT 386-33C Cache System	$2355	64	1/7/0	3/2	1.2GB	32	N	N	N	Y	Y	N	12	Y	Y	Y	Y	10	Y	N/Y	649
Binary Technology	BTI System 386-33C	$1795 [3]	64	1/5/2	4/1	1.2GB	64	Y	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	Y	N/Y	650
BitWise Designs	DeskStation Model 333C	$1995	64	1/5/0	4/1	1.2GB	32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	10	Y	N/Y	651
Blackship Computer Systems	BLK 386/33	$1995 [3]	64	1/4/0	3/2	1.4GB	32	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	N	N/Y	652
Blue Circle Group	BCG 386/33	$1779 [3]	64	0/4/2	5/0	1.2GB	32	N	Y	Y	Y	Y	N	24	Y	Y	N	Y	11	Y	N/N	653
Blue Dolphin Computers	386DX-33 Cache	$1759 [3]	64	1/5/0	4/1	670MB	64	Y	Y	Y	Y	Y	N	12	N	N	N	Y	12	Y	N/N	654
Blue Star Computers	Blue Star 386DX-33	$1969 [2]	64	1/4/1	4/1	1.4GB	32	Y	Y	Y	Y	Y	N	12	Y	Y	N	Y	24	Y	N/Y	655
Bulldog Computer Products	Bulldog 386-33	$1389	128	0/6/2	3/2	700MB	16	N	N	N	Y	Y	Y	12	Y	Y	Y	Y	9	N	N/Y	656
C2 MicroSystems	386/33 Warrior	$1895	64	1/4/0	3/2	1.2GB	64	N	Y	Y	Y	Y	N	12	Y	Y	Y	N	10	N	N/N	657
CIN	CIN 3033 CSV Enterprise 33C	$1645 [3]	64	0/3/3	4/1	330MB	32	Y	Y	Y	Y	Y	N	12	N	N	N	Y	8.5	Y	N/Y	658
Club American Technologies	Falcon 333	$2356	64	0/5/0	3/2	1.2GB	64	Y	Y	N	N	Y	N	12	Y	Y	Y	Y	12	N	N/Y	659
CompuAdd Computer	CompuAdd 333	$2715	128	0/4/1	4/0	1.2GB	32	N	Y	N	N	N	Y	12	Y	Y	N	Y	11	N	Y/Y	660
Compudyne	Compudyne 386/33 DX	$1998	32	0/4/2	3/2	2.4GB	16	N	Y	Y	Y	N	Y	12	Y	Y	Y	Y	8	N	Y/Y	662
Computer Market Place	Ultra 386-33C	$1799 [3,4]	64	1/4/0	3/2	1GB	32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	10	Y	Y/Y	663
Computer Square	Kandu 386-33	$1549 [2]	64	1/6/2	6/0	340MB	32	N	Y	Y	Y	Y	N	12	N	N	N	N	10	Y	N/Y	664
CompuTrend Systems	CompuTrend 386-33	$1804 [3,4]	64	1/3/0	3/2	300MB	32	N	Y	Y	N	Y	N	12	Y	Y	Y	Y	8.5	N	N/N	665
Comtrade Electronics USA	Comtrade 386/33	$1725 [3,4]	128	1/4/1	4/1	1GB	32	Y	Y	Y	Y	Y	N	12	Y	Y	N	Y	12	Y	N/Y	666
CTI	386DX/33 CTI	$1350	64	0/7/1	5/0	1.6GB	32	N	N	Y	Y	Y	N	12	Y	Y	N	N	9	Y	Y/Y	667
CUI	Advantage 386-33 CX	$1770	64	0/6/2	4/2	1.2GB	32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	9	N	Y/Y	668
Dataworld	Data 386i-33	$2100	64	2/4/0	3/2	2.5GB	40	N	Y	N	Y	Y	Y	12	Y	Y	Y	Y	11	Y	Y/Y	669
DEICO Electronics	DEICO System 386DX-33	$2584	128	0/5/1	4/1	400MB	32	Y	Y	Y	Y	Y	Y	12	Y	Y	N	Y	10.5	N	Y/N	670
Dell Computer	Dell System 333P	$2898	32	0/3/0	2/1	500MB	16	Y	Y	Y	Y	N	Y	12	Y	Y	Y	Y	15	Y	Y/Y	671
Destiny Computer	Destiny 386/33	$1399	64	1/3/2	5/0	200MB	32	N	Y	Y	Y	Y	N	12	Y	Y	N	N	7	N	N/N	672
Diamond Technologies	DT 386-33	$1644 [3]	64	1/4/1	4/2	700MB	32	N	Y	Y	Y	Y	N	24	Y	Y	N	Y	9	N	N/Y	673
Dynamic Decisions	386-33C	$2170	64	0/8/0	5/0	1.2GB	32	Y	Y	N	Y	Y	Y	12	Y	Y	Y	Y	8	N	N/N	674
EPS Technologies	EPS 386-33	$1895 [3]	128	1/4/1	4/2	1.2GB	64	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	12	Y	Y/Y	675
FastMicro	FastData 386/33	$1868 [3]	64	0/4/2	5/0	1.2GB	32	N	N	N	Y	Y	N	12	Y	Y	Y	Y	9	Y	Y/Y	676
First Computer Systems	FCS 386-33	$1699 [3]	64	1/4/1	6/1	660MB	32	Y	Y	N	Y	Y	N	24	Y	Y	N	Y	8	Y	N/Y	677
Gateway 2000	Gateway 2000 386/33	$2395 [3,4]	64	1/6/0	3/2	1.2GB	64	N	Y	N	Y	Y	N	12	Y	Y	Y	Y	18	Y	Y/Y	678
G.C.H. Systems	E-Sys 386-33	$1795	64	0/5/0	4/1	200MB	32	N	Y	Y	Y	N	N	24	Y	Y	N	Y	10	N	N/Y	679
HD Computers	HD386-33C	$1545	64	1/6/1	6/0	1GB	32	N	Y	Y	Y	Y	N	24	Y	Y	N	Y	9.5	Y	N/N	680
High Quality Systems	HIQ 333 DX	$1599 [3]	64	0/3/3	5/0	650MB	64	N	Y	Y	Y	Y	N	24	Y	Y	N	Y	11	Y	N/N	681
High Tech Supply	HTS 386 Deluxe System	$1620 [3]	64	1/5/1	4/1	200MB	32	N	Y	Y	Y	Y	N	12	N	N	N	Y	9	Y	N/N	682
Insight Computer	Insight 386-33 Cache	$1895 [3,4]	64	0/6/0	5/0	4GB	64	N	Y	N	Y	Y	N	12	N	N	N	Y	15	Y	Y/Y	683
Intelec	INT 386-33	$1789 [3]	64	1/4/1	4/2	245MB	32	N	Y	N	Y	Y	N	12	N	N	N	Y	9	Y	N/Y	684
International Data Systems	IDS 333r	$1985 [3]	64	1/5/0	3/2	2GB	32	Y	Y	Y	Y	Y	N	12	Y	Y	N	N	9	Y	N/Y	685
International Instrumentation	Blue Max 386/330	$1797	64	1/4/2	3/3	1.6GB	32	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	Y	Y/Y	686
Iverson Computer	Iverson 386/33	$1629	64	1/4/0	4/2	1.2GB	16	N	Y	N	Y	Y	N	12	Y	Y	Y	Y	10.5	N	N/N	687
JCC Systems	JCC 386-33	$1739 [3,4]	64	1/4/2	4/0	1.2GB	16	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	8	N	N/N	688
Kenosha Computer Center	KCC 386-33	$1749	64	0/6/1	4/0	1.2GB	32	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	10	N	N/N	842

Price based on 4MB RAM, 1 2MB or 1 44MB floppy drive, 80MB to 120MB hard disk, one parallel and two serial ports, VGA controller and color monitor, 101-key keyboard, mouse, and DOS 3 3 or later version. [2] 16 inches wide by 34 inches deep or less. [3] Two floppy drives. [4] 120MB to 160MB hard disk.

MAIL-ORDER 386 SYSTEMS

Manufacturer	Product	Price [1]	Memory cache (K)	Free slots (32/16/8 bit)	Externally accessible/internal drive bays	Largest hard disk option	Fast-RAM capacity (MB)	Upgradable CPU	Switchless setup	Compact footprint [2]	Front-panel on/off switch	Front panel reset	IDE connector on motherboard	Warranty (months)	On-site service	On-site service less than $100	Free on-site service	Toll-free technical support	Daily support hours	Weekend support	Technical support BBS/fax	Reader service number
Keydata Int'l	Key 386-33	$1675 [3]	64	0/5/1	4/1	215MB	32	Y	Y	N	Y	Y	N	28	Y	Y	N	Y	9	Y	Y/Y	689
Kris Technologies	Kris System 38M	$1525	64	1/4/2	6/0	1.2GB	32	N	Y	Y	Y	Y	N	24	Y	Y	N	Y	9.5	N	N/Y	690
Lanwise	Profex 333	$1842 [3]	64	1/4/0	5/1	200MB	32	N	Y	N	Y	Y	N	12	Y	Y	Y	Y	8.5	Y	Y/Y	691
Legatech Computers	Legatech 386-33	$1599	64	1/3/1	5/0	1.2GB	32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	9	Y	N/Y	692
LodeStar Computer	LodeStar 386/33	$1989 [3]	64	1/3/1	3/2	1.2GB	64	Y	Y	Y	Y	Y	Y	24	Y	Y	Y	Y	12	Y	N/N	693
Lucky Computer	LSI 386/33 SVG	$1795 [3]	128	0/6/0	3/2	1.2GB	32	N	N	Y	Y	Y	N	12	Y	Y	Y	Y	9	Y	N/Y	694
Maple Leaf Computer	MT 333-P	$1468 [3]	128	0/4/1	4/0	240MB	32	Y	Y	Y	Y	Y	N	24	Y	Y	N	N	9	N	N/N	695
Mega Computer	Impact 386/33+D	$1689	64	1/6/1	3/2	1GB	64	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	8.5	N	N/N	696
Microcomputer Concepts	MCC 386-33	$1731	128	0/4/1	4/1	500MB	32	N	Y	Y	Y	Y	N	12	N	N	N	Y	9.5	N	N/Y	697
Micro Express	Micro Express ME 386-33	$1964	128	0/5/0	4/1	1.2GB	32	Y	Y	Y	Y	Y	Y	24	Y	Y	N	Y	9.5	N	N/Y	698
Micro Generation	386-33	$1795 [3]	64	0/6/2	5/1	340MB	32	N	N	Y	Y	Y	N	12	Y	Y	Y	Y	9	Y	N/Y	699
Micro Symplex	MX 333	$1799 [3]	128	1/7/0	6/0	1GB	64	Y	Y	Y	Y	Y	N	18	Y	Y	Y	Y	12	Y	Y/Y	700
Micro Telesis	Telesis 386-33	$1599	64	1/3/1	5/0	1.7GB	32	N	Y	Y	Y	Y	N	13	Y	Y	N	N	10	Y	N/Y	701
Micro Tough	MT 386/33	$1495 [3]	64	1/4/1	5/0	676MB	32	N	Y	N	Y	Y	N	12	Y	Y	Y	Y	9	Y	N/N	702
Mile Hi Micro Distributing	Mile Hi Model 386-33	$1223	64	0/4/2	3/2	500MB	64	N	Y	N	Y	Y	N	12	N	N	N	Y	8	N	Y/Y	703
Miracle Computers	Miracle Computer 386/33	$1459	64	1/3/0	4/2	200MB	32	N	Y	N	Y	Y	N	12	N	N	N	Y	8.5	Y	N/N	704
MIS	M333	$1343	64	1/7/0	5/0	1.2GB	64	N	Y	N	Y	Y	N	12	Y	Y	N	Y	11	N	N/Y	705
Myoda	Myoda 386-33	$1599 [3]	64	1/4/0	4/1	200MB	32	N	Y	Y	Y	Y	N	12	N	N	N	Y	9.5	Y	N/Y	706
Naga Systems	Naga 386/33	$1895 [3]	64	0/4/2	5/0	1.2GB	32	Y	Y	N	Y	Y	N	24	Y	Y	Y	Y	12	Y	N/Y	707
National Computer	NCI 386/33	$1699	64	1/4/1	5/0	1.2GB	32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	10	N	N/Y	708
Netis Technology	N333 System	$1120	64	1/6/0	4/1	1.2GB	64	N	N	N	Y	Y	N	12	Y	Y	N	N	10	Y	Y/Y	709
New MMI	CMO 386/33	$1299	64	1/3/2	3/1	1.5GB	64	N	N	Y	Y	Y	N	12	Y	Y	N	Y	10	N	N/Y	661
Northgate Computer Systems	Northgate 386/33	$2499	64	0/4/2	4/1	1.2GB	32	N	N	Y	Y	Y	N	12	Y	Y	N	Y	24	Y	Y/Y	710
Novacor	Novas Optimum 386-33	$1695	64	1/4/1	3/2	676MB	32	N	Y	N	Y	Y	N	12	Y	Y	Y	Y	9	N	N/Y	711
PC Brand	386/33 Cache	$2495 [3,4]	64	0/6/1	3/1	400MB	32	Y	Y	Y	Y	N	Y	12	Y	Y	N	Y	24	Y	Y/Y	712
PC Pros	Touche 386/33	$2599	64	1/6/1	4/2	1.2GB	32	Y	Y	Y	Y	Y	N	24	Y	Y	N	Y	8	N	Y/Y	713
PC Turbo	PC Turbo 386/33	$1450	64	0/3/2	4/0	210MB	64	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	8.5	Y	N/N	714
Peregrine Computers	Peregrine 386/33	$2099 [3]	64	0/6/0	3/1	1.2GB	32	N	Y	Y	Y	Y	N	12	Y	Y	Y	Y	9	N	N/N	715
Polywell Computers	Poly 386-33DX	$1350	128	1/5/1	5/0	1.2GB	32	Y	Y	Y	Y	Y	N	24	Y	Y	N	Y	9	Y	N/Y	716
Proteus Technology	386-33 MX	$1895 [3]	64	1/4/0	4/1	1.2GB	16	N	Y	Y	Y	Y	N	24	Y	Y	Y	Y	24	Y	Y/N	717
Royal Computer	Royal 386-33	$1740 [3,4]	64	1/3/1	5/1	1.2GB	32	N	N	Y	Y	Y	N	12	Y	Y	N	Y	9	Y	N/N	719
Sai Systems Laboratories	Sai 386/33	$1820	64	0/5/0	3/2	1.2GB	32	N	Y	Y	N	Y	N	36	Y	Y	N	Y	10	N	N/Y	720
Santron Computer	Santron 386-33 Cache	$1470 [4]	64	0/7/1	5/0	500MB	32	N	Y	Y	Y	Y	N	12	Y	Y	N	Y	9	Y	N/Y	721
Solidtech	Solidtech 386-33	$1795 [3]	64	0/4/1	4/0	338MB	32	N	Y	Y	Y	Y	N	18	N	N	N	Y	9	Y	N/Y	722
Strobe Computer	386/33 Vantage	$1819 [3,4]	64	1/5/0	4/1	660MB	32	Y	Y	Y	Y	Y	N	24	N	N	N	Y	12	Y	N/Y	723
Sunnytech	STI 386-33	$1679	64	1/4/1	4/1	338MB	32	N	Y	Y	Y	Y	N	24	N	N	N	Y	8	Y	N/Y	724
Swan Technologies	Swan Technologies 386/33	$2395 [3]	128	0/5/1	5/2	1.6GB	32	N	Y	Y	N	Y	N	24	Y	Y	Y	Y	12	Y	Y/Y	725
Syntax Computer	Syntax 386-33	$1797 [3]	64	1/2/1	4/1	676MB	32	N	Y	N	Y	Y	N	12	Y	Y	Y	Y	8	N	N/Y	726
Sysper Technologies	Sysper 386/33 Cache	$1520	64	0/6/0	3/1	200MB	32	N	Y	Y	Y	Y	N	12	N	N	N	Y	9	N	N/N	727
Tangent Computer	Tangent 333C	$1840	64	1/5/0	4/0	1.2GB	64	N	Y	Y	N	Y	N	12	Y	Y	Y	Y	10	Y	Y/Y	728
Tri Star Computer	Flash Cache 386-33	$2090 [3,4]	64	0/6/0	4/1	1.2GB	32	N	N	Y	Y	Y	N	24	Y	Y	Y	Y	24	Y	Y/Y	729
Tri State Computers	Maxima 386/33	$1889 [3]	64	1/5/1	3/1	1.2GB	32	N	N	Y	Y	Y	Y	12	Y	Y	Y	N	7.5	Y	N/Y	730
True Data Products	True Data 386/33	$1895 [3]	64	1/5/1	4/1	300MB	32	N	Y	Y	Y	Y	N	12	N	N	N	Y	9	Y	N/Y	731
Ultra-Comp	Ultra-Max 386-33	$2115 [3,4]	128	0/5/1	3/2	1.5GB	32	N	N	N	N	Y	N	12	Y	Y	Y	Y	16	Y	N/Y	732
USA Electronics	USA Electronics 386/33	$1595	64	1/3/1	5/0	660MB	32	Y	Y	Y	Y	Y	N	12	N	N	N	Y	9	Y	N/Y	733
USA Flex	Flex 386/33	$1799	64	0/6/0	5/0	1.2GB	32	N	Y	Y	Y	Y	Y	12	Y	Y	Y	Y	24	Y	Y/Y	734
U.S. Turbo System	U.S. Turbo 386-33	$1300	64	1/3/1	4/1	240MB	16	N	N	Y	Y	Y	N	12	N	N	Y	N	6.5	N	N/Y	735
V-COM	V-COM 386/33C	$1699	64	1/5/2	4/1	1.2GB	32	N	Y	Y	Y	Y	N	12	N	N	Y	Y	12	Y	N/Y	736
Vektron Int'l	Vektron PSY 386/33C	$1429	64	1/4/1	4/1	1.2GB	64	Y	Y	Y	Y	Y	N	12	N	N	Y	N	7	Y	N/Y	737
Zeas Int'l	Zeas 386-33	$2795 [3,4]	128	0/6/1	4/3	1.1GB	32	Y	Y	N	Y	Y	Y	12	Y	Y	Y	Y	24	Y	Y/Y	738

For more information about all products in this table, circle reader service no. 902.

WHERE TO BUY

Aberdeen
1125 S. Maple Ave., Unit P
Mantebella, CA 90640
800/552-6868,
213/725-3366 (fax)

Absec Research
14262 Franklin Ave. #109
Tustin, CA 92680
800/255-2257,
714/832-0384 (fax)

Accel
5655-D General
Washingtan Dr.
Alexandria, VA 22312
800/486-6700,
703/750-0206 (fax)

Acma Computers
48501 Warm Springs Blvd.
Fremant, CA 94539
800/456-1818,
510/623-0818 (fax)

American Computer Express
2303B Industrial Blvd.
Sarasata, FL 34234
800/533-4604,
813-359-1325 (fax)

American Research
1101 Manterey Pass Rd.
Manterey Park, CA 91754
800/346-3272,
213/265-1973 (fax)

AMS
4801 Little Jahn St., Unit A
Baldwin Park, CA 91706
800/955-1089,
818/814/0782 (fax)

Ares Microdevelopment
23660-A Research Dr.
Farmingtan Hills, MI 48335
800/322-3200,
313/473-4450 (fax)

Arlington Computer Products
1970 Carbay Rd.
Mt. Prospect, IL 60056
800/548-5105,
708/228-0516 (fax)

Automated Computer Technology
10849 Kinghurst
Haustan, TX 77099
800/521-9237,
713/568-1779 (fax)

A-Tronic Computer
15703 E. Valley Blvd.
City af Industry, CA 91744
800/888-6118,
818/961-4337 (fax)

Binary Technology
2657 Beltline Rd.
Carralltan, TX 75006
800/776-7990,
214/418-2099 (fax)

BitWise Designs
Bldg. 50
Ratterdam Industrial Park
Schenectady, NY 12306
800/367-5906,
518/356-9749 (fax)

Blackship Computer Systems
2031 O'Taale Ave.
San Jase, CA 95131
800/531-7447,
408/432-1443 (fax)

Blue Circle Group
6101 Baker Rd. #206
Minnetonka, MN 55345
800/747-9069,
612/945-9170 (fax)

Blue Dolphin Computers
890F Cawan Rd.
Burlingame, CA 94010
800/345-0633,
415/259-9898 (fax)

Blue Star Computers
2312 Central Ave. NE
Minneapalis, MN 55418
800/950-8854,
612/788-3442 (fax)

Bulldog Computer Products
610 Industrial Park Dr.
Evans, GA 30809
800/438-6039,
404/860-7358 (fax)

C2 MicroSystems
47560 Seabridge Dr.
Fremant, CA 94538
510/683-8888,
510/683-8893 (fax)

CIN Inc.
9690-207 Telstar Ave.
El Mante, CA 91731
800/783-4996,
818/575-8289 (fax)

Club American Technologies
3401 W. Warren Ave.
Fremant, CA 94539
800/368-3288,
510/490-2687 (fax)

CompuAdd Computer
12303 Technalagy Blvd.
Austin, TX 78727
800/627-1967,
512/250-3658 (fax)

Compudyne
15151A Surveyar
Addison, TX 75244
800/932-2667,
214/702-0300 (fax)

Computer Market Place
1101 Sussex Blvd.
Braamall, PA 19008
800/545-7397,
215/690-6900

Computer Square
1070 N. Raselle Rd.
Haffman Estates, IL 60195
800/284-7746,
708/885-7661 (fax)

CompuTrend Systems
1306 Jahn Reed Ct.
City af Industry, CA 91745
800/677-6477,
818/369-6803 (fax)

Comtrade Electronics USA
1016-B Lawson St.
City af Industry, CA 91748
800/969-2123,
818/964-2492 (fax)

CTI
41-21 28th St.
Lang Island City, NY
11101
800/752-1745

CUI
1680 Civic Ctr. Dr. #101
Santa Clara, CA 95050
800/458-6686,
408/241-2487 (fax)

Dataworld
3733 San Gabriel River Pkwy.
Pica Rivera, CA 90660
800/736-3282,
310/695-7016 (fax)

DEICO Electronics
2800 Bayview Dr.
Fremant, CA 94538
800/321-8990,
510/651-8109 (fax)

Dell Computer
9505 Arbaretum Blvd.
Austin, TX 78759
800/284-3355,
512/338-8700 (fax)

Destiny Computer
3480 Investment Blvd.
Hayward, CA 94545
800/366-4272,
510/783-2727

Diamond Technologies
17155 Von Karman Ave.
#103
Irvine, CA 92714
800/989-7253,
714/252-1508 (fax)

Dynamic Decisions
53 Murray St.
New York, NY 10007
800/869-9888,
212/227-9610 (fax)

EPS Technologies
P.O. Bax 278
Jeffersan, SD 57038
800/447-0921,
605/966-5482 (fax)

FastMicro
4405 E. Baseline Rd.
Phoenix, AZ 85044
800/821-9000

First Computer Systems
6000 Live Oak Pkwy.
#107
Narcross, GA 30093
800/325-1911,
404/441-1911

Gateway 2000
610 Gateway Dr.
N. Siaux City, SD 57049
800/523-2000,
605/232-2000

G.C.H. Systems
500 Bernarda Ave.
Mauntain View, CA 94043
800/743-6938,
415/964-4428 (fax)

HD Computers
1196 Kern Ave.
Sunnyvale, CA 94086
800/347-0493,
408/720-1967 (fax)

High Quality Systems
740 N. Mary Ave.
Sunnyvale, CA 94086
800/875-2882,
408/245-3108 (fax)

High Tech Supply
730 W. Wilshire Blvd.
#103
Oklahoma City, OK
73116
800/580-8324,
405/843-4873

Insight Computers
1912 W. 4th St.
Tempe, AZ 85281
800/755-9628,
602/829-9193 (fax)

Intelec
6075 N.W. 82nd Ave.
Miami, FL 33166
800/683-0969,
305/477-9074 (fax)

International Data Systems
12800 Garden Grave
Blvd., Ste. E
Garden Grave, CA 92643
714/530-8677,
714/530-0815 (fax)

International Instrumentation
P.O. Box 3751
Thausand Oaks, CA
91359
800/543-3475

Iverson Computer
P.O. Bax 6250
McLean, VA 22106-0722
800/444-7290,
703/883-0722 (fax)

JCC Systems
17990 E. Ajax Cir.
City af Industry, CA 91748
800/421-1711,
818/575-7950 (fax)

Kenosha Computer Center
9133 91st St.
Kenasha, WI 53140
800/255-2989,
414/697-0620 (fax)

Keydata Int'l
111 Corporate Blvd.
S. Plainfield, NJ 07080
800/486-4800,
908/756-7359 (fax)

Kris Technologies
260 E. Grand Ave.
South San Francisco, CA 94080
800/282-5747,
415/875-8048 (fax)

Lanwise
736 Stinson Ave.
City of Industry, CA 91745
800/969-6688,
818/968-1388 (fax)

Legatech Computers
789 S. San Gabriel Blvd., Ste. D
San Gabriel, CA 91776
800/892-9911,
818/309-2816 (fax)

LodeStar Computer
18539 E. Gale Ave.
City af Industry, CA 91748
800/875-7568,
818/810-5928 (fax)

Lucky Computer
1701 Greenville Ave. #606
Richardson, TX 75081
800/966-5825,
214/437-3251 (fax)

Maple Leaf Computer
15626 Rausch Rd., Ste. B
City of Industry, CA 91744
818/855-4650,
818/855-4653 (fax)

Mega Computer
10840 Thornmint Rd. #118
San Diego, CA 92705
800/338-6628,
619/487-8888

Micro Express
1801 Carnegie Ave.
Santa Ana, CA 92705
800/642-7621,
714/852-1225 (fax)

Micro Generation
300 McGaw Dr.
Edisan, NJ 08837
800/872-2841,
908/225-8999 (fax)

Micro Symplex
2321 W. Broadway
Mesa, AZ 85202
800/827-6145,
602/834-7791 (fax)

Micro Telesis
17891 Skypark Cir., Unit E
Irvine, CA 92714
714/660-1422,
714/660-1527 (fax)

Micro Tough
1311 John Reed Ct.
City of Industry, CA 91745
800/888-8628,
818/333-8380 (fax)

Microcomputer Concepts
15200 Transistor Ln.
Huntington Beach, CA 92649
800/772-3914,
714/898-3002 (fax)

Mile Hi Micro Distributing
10525 E. 40th Ave. #203
Denver, CO 80239
800/800-9828,
303/375-9390

Miracle Computers
2940 E. La Palma Ave., Ste. E
Anaheim, CA 92806
800/446-9929

MIS
935 Benecia Ave.
Sunnyvale, CA 94086
800/733-9188,
408/730-5933 (fax)

Myoda
1053 Shore Rd.
Naperville, IL 60563
800/562-1071,
800/676-9632

Naga Systems
1520 W. Mineral Rd.
Tempe, AZ 85283
800/964-3939,
602/820-3153 (fax)

National Computer
7000 N. Braadway
Bldg. 3
Denver, CO 80221
800/659-5012,
303/429-8120 (fax)

Netis Technology
1606 Centre Painte Dr.
Milpitas, CA 95035
408/263-0368,
408/263-4624 (fax)

New NMI
2400 Reach Rd.
Williamspart, PA 17701
800/233-8950,
717/327-1217 (fax)

Northgate Computer Systems
7075 Flying Claud Dr.
Eden Prairie, MN 55344
800/548-1993,
612/943-8338(fax)

Novacor
1841 Zanker Rd.
San Jose, CA 95112
800/486-6682,
408/441-6811 (fax)

PC Brand
405 Science Dr.
Moorpark, CA 93021
800/722-7263,
800/722-7392 (fax)

PC Pros
8205 S. Cass Ave.
Darien, IL 60559
708/810-1010,
708/810-9490 (fax)

PC Turbo
220 S. Fifth Ave.
City of Industry, CA 91746
800/745-8868,
818/855-5660 (fax)

Peregrine Computers
P.O. Box 675
Troy, OH 45373
800/326-7015,
513/339-6272 (fax)

Polywell Computers
61-C Airport Blvd.
South San Francisco, CA 94080
800/999-1278,
415/583-7222,
415/583-1974 (fax)

Proteus Technology
377 Rt. 17
Hasbrauck Heights, NJ 07604
800/878-6427,
201/288-2245 (fax)

Royal Computer
1201 John Reed Ct.
City of Industry, CA 91745
800/288-6118,
818/330-2717 (fax)

Sai Systems Laboratories
911 Bridgeport Ave.
Shelton, CT 06484
800/331-0488,
203/929-6948 (fax)

Santron Computer
1185 Chess Dr.
Foster City, CA 94404
800/748-6355,
415/571-6079 (fax)

Solidtech
2014 Rt. 22 E
Scotch Plains, NJ 07076
800/321-8922,
908/756-7359 (fax)

Strobe Computer
20793 Valley Blvd., Ste. A
Walnut, CA 91789
800/888-5095,
714/595-2410 (fax)

Sunnytech
500 Hollister Rd.
Teterboro, NJ 07608
800/367-1132,
201/288-6352 (fax)

Swan Technologies
3075 Research Dr.
State College, PA 16801
800/468-9044,
814/237-4450 (fax)

Syntax Computer
18535 E. Gale Ave.
City af Industry, CA 91748
800/536-8900,
818/854-6366 (fax)

Sysper Technologies
4031 Clipper Ct.
Fremont, CA 94538
800/441-5484,
510/651-9699 (fax)

Tangent Computer
197 Airport Blvd.
Burlingame, CA 94010
800/223-6677,
415/342-9380 (fax)

Tri Star Computer
120 S. Weber Dr.
Chandler, AZ 85226
800/678-2799,
602/961-4010 (fax)

Tri-State Computers
160 Braadway
New Yark, NY 10038
800/433-5199,
212/349-3134

True Data Products
775 Quaker Hwy., Rt. 146A
P.O. Box 347
Uxbridge, MA 01569
800/635-0300,
508/278-6555

Ultra-Comp
3801 Ultra-Camp Dr.
Earth City, MO 63045
800/435-2266,
314/298-1288 (fax)

USA Electronics
9090 N. Stemmons Fwy.
Dallas, TX 75247
800/332-8434,
214/631-4817 (fax)

USA Flex
471 Brighton Dr.
Bloomingdale, IL 60108
800/800-4395,
708/351-7204 (fax)

U.S. Turbo System
1819 N. Floradale Ave.
South El Monte, CA 91733
818/579-2405,
818/579-9572 (fax)

V-COM
1855 Business Center Dr.
Duarte, CA 91010
800/748-6776,
818/301-9005 (fax)

Vektron Int'l
2100 N. Hwy. 360 #1904
Grand Prairie, TX 75050
214/606-0280,
214/606-1278 (fax)

Zeos Int'l
530 5th Ave. NW
St. Paul, MN 55112
800/423-5891,
612/633-1325 (fax)

Toss some confetti.

1990 and 1991 World Class Awards
for Best Mail-Order Company

☐ 3½″ format available from us. Specify when ordering.
⊙ package includes both 5¼″ and 3½″ disks.
⊞ 3½″ format available from manufacturer by request. Call us for details.
CP—copy-protected; **NCP**—not copy-protected.

The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.

SOFTWARE

We carry only the latest versions of products. Version numbers are current at press time. Products listed here in red are Microsoft Windows Applications.

AddStor ... NCP
4090 ⊙SuperStor 2.0 ..... $83.

Adobe Systems ... NCP
7547 ⊙Adobe Type Manager 2.0 for Windows . 69.
9623 ⊙Adobe TypeAlign 1.0 for Windows .... 69.
6591 ⊙Adobe Illustrator 4.0 for Windows .... 429.
⊙Adobe TypeSets for Business..... ea. 95.
6590 ⊙Adobe Streamline 3.0 for Windows ... 125.
7928 ⊙Adobe Plus Pack 1.0..... 129.
8367 ⊙ATM and Plus Pack Bundle..... 169.
⊙Adobe PostScript Cartridge *(with choice of FREE Type Cartridge 1 or Type Cartridge 2)* 239.
(Entire Adobe Type Library, from 1 to 260 is available. Call for more information.)

Aldus ... NCP
8000 ☐Persuasion 2.0 for Windows ..... 329.
1341 ☐FreeHand 3.0 for Windows..... 395.
1332 ☐PageMaker 4.0..... 499.
4195 ☐Photostyler 1.0 ..... 529.

Alpha Software ... NCP
5104 ⊙Alpha FOUR 2.0 *(multi-user edition with free LAN 2-pack)*..... 299.

Application Techniques ... NCP
1214 ⊙Pizazz Plus 2.0 ..... 65.
9621 ⊙Picture Eze 2.0 for Windows..... 95.

Artisoft ... NCP
2455 Lantastic EtherNet Starter Kit *(includes software, 2 EtherNet cards, cable)* ..... 479.
2452 EtherNet Adapter Card..... 199.

Atech Software ... NCP
9436 ☐Publisher's Powerpak 1.5 for Windows $49.
9435 ☐Publisher's Powerpak 2.1 for WordPerfect & Microsoft Word ..... 49.
4797 ⊙AllType 1.0 *(universal typeface converter)* 49.

Attitash Software ... NCP
8846 ⊙WideAngle 2.0 ..... 79.

Automap ... NCP
2729 ☐Automap 1.0..... 52.

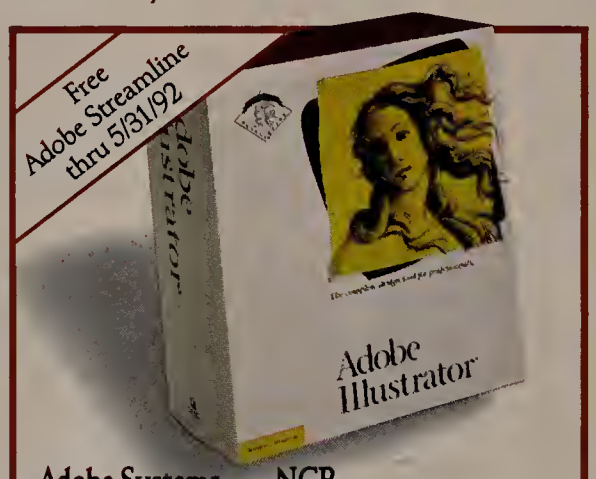
Avery Dennison ... NCP
6006 ⊙Label Pro 1.6 *(Laser)*..... 49.
7336 ⊙Label Pro 1.0 for Dot Matrix ..... 49.

Banner Blue Software ... NCP
3322 ⊙Family Tree Maker 2.0..... 39.
3324 ⊙Org Plus Advanced 6.0..... 65.
2088 ⊙Org Plus for Windows 1.0 ..... 125.

Berkeley Systems ... NCP
9885 ⊙After Dark 2.0 for Windows..... 29.

Bitstream ... NCP
7568 ⊙FaceLift 2.0 for Windows 2.x/3.0..... 59.
8040 ⊙FaceLift 1.5 for WordPerfect 5.0/5.1 ... 59.
2332 ⊙TypeEssentials 1.0 *(Headlines)* ..... 62.
⊙TypeEssentials 1.0 *(all others)* .... ea. 92.
2089 ⊙MakeUp 1.0 for Windows 3.0/3.1 ..... 95.

Borland International ... NCP
3551 ⊙Quattro Pro SE 1.0 ..... 47.
6242 ⊙Quattro Pro 3.0 ..... 319.
7030 ☐Quattro Pro 3.0 Competitive Upgrade . 95.
9695 ☐Borland's C++ 2.0..... 325.
1514 ⊙Paradox 3.5 ..... 499.
7988 ☐Paradox 3.5 Competitive Upgrade ... 165.
9635 ⊙Object Vision 2.0 ..... call



Adobe Systems ... NCP
1598 ⊙*Adobe Illustrator 4.0 for Windows*—Now includes Adobe Type Manager, TypeAlign, Separator, 40 Adobe typefaces & a selection of Adobe patterns, textures, symbols & borders from the Adobe Collector's Editions... **$429.**

Broderbund ... NCP
1434 ⊙New Print Shop..... 35.

ButtonWare ... NCP
6419 ⊙PC-File 6.0 ..... 85.

Caere ... NCP
8933 ⊙Omnipage Professional 1.0 ..... 669.

Calera ... NCP
1769 ⊙Fax Grabber 1.0..... 99.

Campbell Services ... NCP
5068 ⊙On Time 1.1 for Windows ..... 75.

Central Point ... NCP
5039 ☐PC Tools 7.1 ..... 109.
6179 ☐PC Tools Deluxe LAN 7.1 ..... 799.
8114 ⊙Backup 7.1 *(DOS and Windows)* ..... 79.
9751 ⊙AntiVirus 1.1..... 79.

Chipsoft ... NCP
1663 ⊙TurboTax Personal 1040 9.0 for DOS .. 49.
5366 ⊙TurboTax Personal 1040 9.0 for DOS & Tax Tutor Plus Bundle..... 82.
3517 ⊙TurboTax Personal 1040 9.0 for Windows 59.
State Tax Packages
DOS ver... ea. 38. Windows ver... ea. 49.

Chronologic Corporation ... NCP
8849 ⊙Instant Recall 1.2 ..... 64.

CompuServe ... NCP
7546 ⊙DOS Membership Kit 1.3 ..... 29.

Bitstream ... NCP
⊙*Type Essentials 1.0*—Typeface packages grouped to suit your needs: Letters, Memos & Faxes; Newsletters, Brochures & Announcements; & Spreadsheets, Graphs & Presentations. **ea. $92.**
2332 ⊙*Type Essentials 1.0: Headlines*..... 62.

Concentric Data Systems ... NCP
6575 ⊙R & R Relational Report Writer 4.0.... 159.

Contact Software ... NCP
1625 ⊙Act! 2.1..... 229.

Corel Systems ... NCP
5506 ☐CorelDRAW! 2.0..... 365.
2618 CorelDRAW! 2.0 CD-ROM ..... 449.

DAC Easy ... NCP
1748 ⊙Accounting 4.2..... 99.

Data Storm ... NCP
4798 ⊙PROCOMM PLUS 2.01 ..... 69.

DCA/Crosstalk ... NCP
5611 ⊙Crosstalk 1.2 for Windows..... 119.

Delrina Technology ... NCP
2446 ⊙WinFax Pro 2.0..... 75.
4325 ☐PerFORM 2.1 ..... 95.
7351 ⊙PerFORMPRO 1.0 ..... 179.

Digital Research ... NCP
8288 ☐DR DOS 6.0 ..... 69.

Discovery Systems ... NCP
3215 Nautilus Subscription Kit *(CD-ROM)*..... 20.

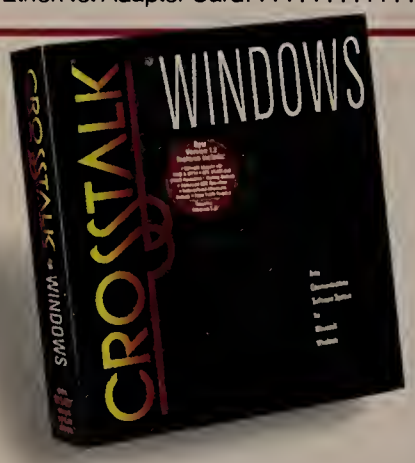
Fifth Generation Systems ... NCP
7725 ⊙Direct Access 5.1 ..... 64.
3950 ⊙Fastback Plus 3.0 ..... 119.

Fox Software ... NCP
6188 ⊞FoxPro 2.0 ..... 489.

Funk Software ... NCP
9488 ⊙Sideways 3.3 & P.D. Queue 1.0..... 85.

Geoworks ... NCP
5217 ☐Geoworks Pro..... 129.

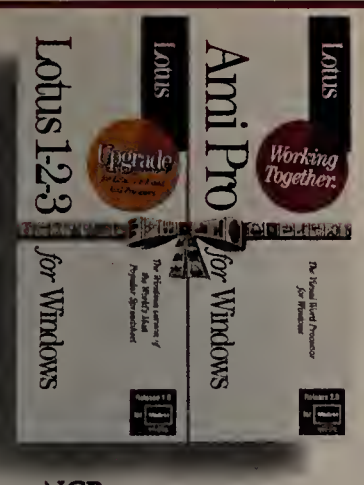
Gibson Research ... NCP
9832 ⊙SpinRite II 2.0 ..... 64.



DCA/Crosstalk ... NCP
5611 ⊙*Crosstalk 1.2 for Windows*—Simple to master & offers excellent background operation. Includes VT220/VT320, ZMODEM, & support for networks & high-speed modems. *InfoWorld*'s "Product of the Year" ..... **$119.**

Campbell Services ... NCP
5068 ⊙*OnTime 1.1 for Windows*—An easy-to-use, lifetime calendar and to-do list manager. OnTime for Windows focuses on doing one thing and doing it extremely well—managing your calendar ..... **$75.**

Give a loud cheer.



Lotus ... NCP
2747 ☐ *1-2-3 for Windows & Ami Pro 2.0 "Double Up" Upgrade*–Upgrade from any PC release of 1-2-3 or any Lotus word processor to both 1-2-3 for Windows and Ami Pro 2.0! . . $199.

Great American Software ... NCP
3978 ☐One-Write Plus Accounting 1.0 . . . . . 105.
4880 ☐One-Write Plus Acct. Works 1.0. . . . . 189.
Helix Software ... NCP
9627 ⊙Netroom 2.1 *(single user)* . . . . . 65.
IBM ... NCP
2666 ☐DOS 5.0 Upgrade . . . . . 59.
ICOM Simulations ... NCP
1326 ⊙Intermission 2.0 for Windows . . . . . 29.
Individual Software ... NCP
1328 ⊙Professor Windows 1.0. . . . . 27.
6222 ⊙Resume Maker 1.3. . . . . 29.
Inset Systems ... NCP
7298 ⊙HiJaak 2.1 . . . . . 125.
7300 ⊙Inset Plus HiJaak . . . . . 145.
2040 ⊙HiJaak Color Sep 1.0 . . . . . 339.
Intuit ... NCP
1856 ⊙QuickPay 2.0 . . . . . 35.
2426 ⊙Quicken 5.0 . . . . . 45.
5596 ⊙Quicken for Windows 1.0 . . . . . 45.
2474 ⊙Quicken with QuickPay. . . . . 75.
LaserTools ... NCP
6882 ⊙PrintCache 2.5 . . . . . 99.
Lotus ... NCP
5417 ☐1-2-3 3.1 Plus. . . . . 415.

Inset Systems ... NCP
7298 ⊙ *HiJaak 2.1*–Capture screens & convert graphics files with HiJaak release 2.1. New features include 5K pop-up window, many new raster & vector formats and support for more than 25 Group 3 fax devices . . . . $125.

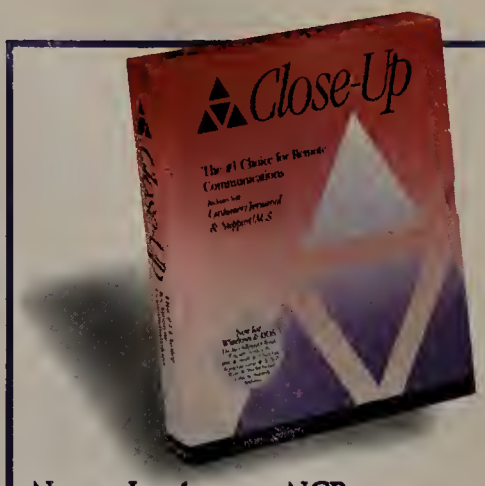
5653 ☐1-2-3 2.3 . . . . . $335.
1852 ☐1-2-3 2.3 Upgrade. . . . . 95.
2755 ☐1-2-3 for Windows 1.0. . . . . 399.
2747 ☐1-2-3 for Windows & Ami Pro 2.0 Upgrd. 199.
5799 ⊙Ami Pro 2.0 . . . . . 299.
1847 ⊙Ami Pro Competitive Upgrade . . . . . 95.
3523 ⊙Freelance for Windows 1.0 . . . . . 349.
2750 ⊙cc:mail DOS Platform Pack. . . . . 129.
2748 ⊙cc:mail Windows Platform Pack . . . . . 335.
2749 ⊙cc:mail 25 user Pack . . . . . 399.
M-USA Business Systems ... NCP
3408 ⊙Pacioli 2000 *(Accounting software)* . . . . 32.
MacroMind•Paracomp ... NCP
3484 ☐Action! 1.0 . . . . . 349.
MECA ... NCP
2798 ☐Managing Your Money 8.0 . . . . . 99.
4603 ⊙Tobias' Tax Cut 1040 1991. . . . . 39.
Microcom ... NCP
4408 ⊙Micro Courier 1.0 . . . . . 59.
6234 ⊙CarbonCopy Plus 6.0 . . . . . 119.
4410 ⊙CarbonCopy Plus for Windows . . . . . 119.
Micrografx ... NCP
3627 ☐Windows Draw! 3.0. . . . . 95.
Micro Logic Software ... NCP
8579 ⊙MoreFonts 3.0 . . . . . 75.
Microlytics ... NCP
7931 ☐Random House Encyclopedia 1.0 . . . . 68.

Corel Systems ... NCP
5506 ☐ *CorelDRAW! 2.0*–"CorelDRAW 2.0 is worth every penny. Special effects can even turn inexperienced artists into master draftsmen," Luisa Simone of *PC Magazine*. . . $365.
2618 *CorelDRAW! 2.0 CD-ROM* . . . . . 449.

Microsoft ... NCP
3338 ☐Money 1.0 for Windows . . . . . 45.
7010 ☐Windows 3.0. . . . . 99.
7388 ⊙Project 3.0 for Windows . . . . . 445.
2904 ☐Works 2.0 . . . . . 95.
2735 ⊙Works 1.0 for Windows . . . . . 129.
3337 ⊙Publisher 1.0 for Windows . . . . . 129.
7387 ⊙PowerPoint 2.0 for Windows . . . . . 309.
6195 ⊙Word 2.0 for Windows. . . . . 309.
2856 ⊙Excel 3.0 for Windows . . . . . 309.
8137 ☐Office 2.0 for Windows . . . . . 479.
1620 ☐MS-DOS 5 Upgrade . . . . . 49.
1624 ⊙Visual Basic 1.0 . . . . . 129.
Multisoft ... NCP
4925 ⊙PC-Kwik Power Pak 2.1 . . . . . 75.

1-800/800-0003

PC Connection 950W
6 Mill Street
Marlow, NH 03456
SALES 603/446-7721 **FAX** 603/446-7791

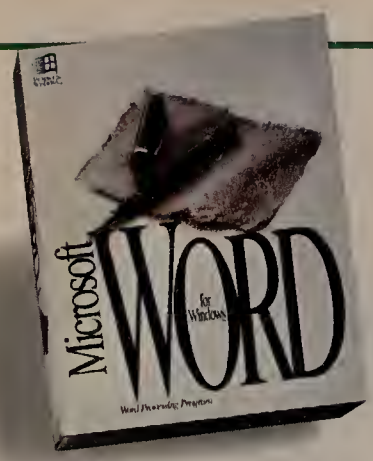


Norton-Lambert ... NCP
2753 ☐ *Close-Up for Windows & DOS Dual Pack 4.0–PC Magazine's* Editors' Choice (2/92). Take control of PCs miles away by modem. View & operate any Windows, DOS or VGA/EGA program . . . . **intro. price until 6/30/92 $129.**

Nolo Press ... NCP
5122 ⊙For The Record 2.0. . . . . 35.
2982 ⊙WillMaker 4.0 . . . . . 39.
Norton-Lambert ... NCP
2753 ☐CloseUp for Windows & DOS Dual Pack 129.
Novell ... NCP
4000 ☐Netware Lite 1.0 . . . . . 69.
Okna ... NCP
9696 ⊙Desktop Set 3.0 for Windows . . . . . 79.
Panacea ... NCP
2413 ☐WinSpeed 1.0 *(Windows accelerator)* . . 55.
PC Globe ... NCP
5902 ⊙PC Globe 4.0 . . . . . 39.
5900 ⊙PC USA 2.0 . . . . . 32.
Personics ... NCP
9288 Laptop Ultravision 2.1 *(3½" only)*. . . . . 45.
4384 ⊙Ultravision 2.0. . . . . 79.
Polaris Software ... NCP
4395 ⊙PackRat 4.0 . . . . . 249.
PowerUpi ... NCP
7860 ⊙Calendar Creator Plus 4.0 . . . . . 52.
7857 ⊙Labels Unlimited 3.0. . . . . 59.
7858 ⊙Express Publisher 2.0. . . . . 99.
Qualitas ... NCP
7539 ☐386MAX 6.0 . . . . . 65.
7967 BlueMAX 6.0 for PS/2 *(3½" only)*. . . . . 79.
Quarterdeck ... NCP
3221 ☐Expanded Memory Mgr. 386 6.0 . . . . . 59.
4586 ☐DESQView 386 2.4 . . . . . 129.
QUE Software ... NCP
4155 ⊙RightWriter 4.0 . . . . . 54.
Reality Technologies ... NCP
7891 ⊙WealthStarter 2.0 w/Charles J. Givens. . 35.
6572 ⊙WealthBuilder 1.1 . . . . . 95.
Reference Software ... NCP
4396 ⊙Grammatik V 1.0. . . . . 59.
7483 ⊙Grammatik for Windows 2.0 . . . . . 59.
Roykore ... NCP
2473 ⊙Instant ORG Charting! 1.0. . . . . 125.
8162 ⊙ABC Flowcharter 1.1. . . . . 189.
Software Publishing ... NCP
4389 ☐Harvard Draw 1.0 . . . . . 415.
3482 ☐Harvard Graphics 3.0. . . . . 399.
4403 ☐Harvard Graphics 1.0 for Windows. . . 399.
Software Ventures ... NCP
6889 ⊙MicroPhone II 2.0. . . . . 99.
Spinnaker ... NCP
1415 ⊙PFS: WindowWorks 1.0 . . . . . 129.
Stac Electronics ... NCP
1409 ⊙Stacker 2.0 . . . . . 89.
3524 ⊙Stacker 2.0 w/16-bit Coprocessor Card 185.

PC CONNECTION®

It's PC Connection's



Microsoft ... NCP
6195 ▣ *Word 2.0 for Windows*–Everyday tasks are easy with the customizable toolbar, drag & drop movement of text, & instant character & page formatting from the Ribbon & Ruler. Includes drawing, charting & WordArt . **$309.**

Symantec ... NCP
6397 ☐The Norton Backup 1.2 *(Windows/DOS)* 84.
3146 ☐The Norton Utilities 6.0 . . . . . 115.
3425 ☐Q&A 4.0 . . . . . 249.
7999 ☐Norton Anti-Virus 1.5 . . . . . 84.
2359 ☐The Norton Desktop 1.0 for Windows . . 99.
8378 ☐PC Anywhere IV 4.5 . . . . . 119.
4688 ☐Zortech C++ 3.0 . . . . . 479.

Systems Compatibility ... NCP
9046 ☐The Writer's Toolkit 2.0 *(DOS)* . . . . . 79.
3949 ☐The Writer's Toolkit 2.0 for Windows . . . 79.

Teleware ... NCP
9847 ▣M.Y.O.B. for Windows. . . . . 139.

TIMESLIPS ... NCP
2987 ☐Timeslips III 4.0. . . . . 195.
5037 ☐TimeSheet Pro for Windows . . . . . 135.

Timeworks ... NCP
6253 ▣Publish-It! 2.0 . . . . . 159.

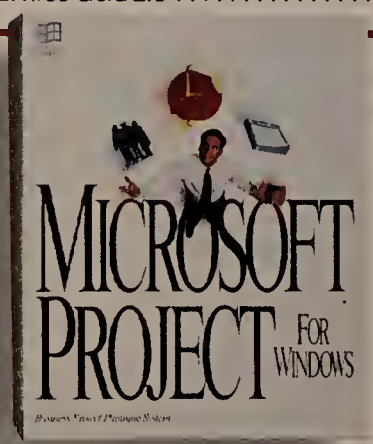
Tool Technology ... NCP
3863 WinTools for Windows 1.0 *(3½" only)*. . . 125.

Touchstone Software ... NCP
7420 ▣Check It 3.0 . . . . . 85.

Traveling Software ... NCP
4407 ▣LapLink Pro 4.0 . . . . . 95.

WordPerfect Corporation ... NCP
7781 ▣LetterPerfect 1.0 . . . . . 129.
4214 ▣WordPerfect Office PC . . . . . 89.
3804 ☐WordPerfect 5.1 . . . . . 265.
3494 ☐WordPerfect 5.1 for Windows . . . . . 279.
1466 ☐WordPerfect 5.1 Additional User . . . . . 199.

XTREE ... NCP
6161 ▣XTree Gold 2.5 . . . . . 99.



Microsoft ... NCP
7388 ▣ *Project 3.0 for Windows*–Take charge of your plans with the newest version of Microsoft's best-selling project management software. Includes a customizable toolbar and Planning Wizards. . . . . **$445.**

RECREATIONAL/EDUCATIONAL

Abracadata ... NCP
3641 ▣Design Your Own Railroad . . . . . $39.
3629 ▣Design Your Own Home-Architecture 3.0 63.
3631 ▣Design Your Own Home-Interiors 1.0 . . 63.

Broderbund ... CP
8068 ▣Where in World is Carmen Deluxe. . . . . 49.
1836 ▣Where in America's Past is Carmen . . . 39.
5851 ▣SimCity from Maxis. . . . . 29.
4388 ☐SimAnt from Maxis . . . . . 39.
4411 ▣SimEarth for Windows from Maxis . . . . 45.

Davidson & Assoc. ... NCP
3947 ▣Math Blaster Plus . . . . . 29.
4183 ▣KidWorks . . . . . 29.

Electronic Arts ... NCP
4534 ▣Mavis Beacon Teaches Typing 2.0 *(CP)* 35.
3031 ▣Mavis Beacon for Windows. . . . . 45.
3023 ▣ChessMaster 3000 . . . . . 35.

Harvard Associates ... NCP
2324 ▣PC Logo 3.0 . . . . . 59.

HyperGlot Software ... NCP
(French, German, Italian, Spanish available.)
☐Word Torture for Windows . . . . . ea. 34.
☐Word Torture 3.0 . . . . . ea. 29.

Knowledge Adventure ... NCP
1483 ▣Sports Adventure 1.0 . . . . . 55.
3861 ▣Knowledge Adventure 1.0 . . . . . 55.

Cardinal ... 1 year
Cardinal 9600 Modem–Superior American built quality. Supports V.32 9600 bps operation with V.42bis data compression for speeds up to 38,400. As written about in *Business Week* (8/19/91).
2783 *External*. . **$349.** 1480 *Internal*. . **$329.**

Microsoft ... NCP
7881 ☐Entertainment Pack I for Windows. . . . . 29.
2858 ☐Flight Simulator 4.0. . . . . 39.

Penton Overseas ... NCP
▣VocabuLearn/ce Levels I & II *(French, Italian, German, Spanish, Russian, Hebrew and Japanese)*. . . . . ea. 35.

Personal Training Systems ... NCP
Training tutorials - beg. to adv. for Windows, Excel, PageMaker, & Lotus 1-2-3 *(3½")* ea. 65.

Sierra ... CP
9466 ☐Space Quest IV *(VGA)*. . . . . 45.
3193 ☐Police Quest III *VGA)*. . . . . 45.

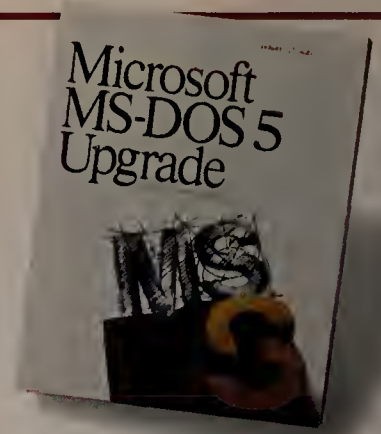
Software Toolworks ... NCP
3294 ▣Game Pak *(5 games in one)* . . . . . 32.
5032 Miracle *(piano teacher) (incl. kybd.)* . . . . 339.

Spectrum Holobyte ... NCP
4834 ▣Super Tetris. . . . . 29.
4833 ▣Super Tetris for Windows. . . . . 29.

Toyogo ... NCP
2701 ▣Nemesis Go Master 5.0 for Windows . . 35.
7674 ▣Nemesis Go Master 5.0 . . . . . 35.

True BASIC, Inc. ... NCP
▣Kemeny/Kurtz Math Series . . . . . ea. 45.

Walt Disney Computer Software ... CP
2629 ▣Mickey's 123's . . . . . 29.
2624 ▣Mickey's ABC's . . . . . 29.
4398 ▣The Animation Studio . . . . . 79.
4416 Sound Source . . . . . 29.



Microsoft ... NCP
1620 ☐ *MS-DOS 5 Upgrade*–Improved graphical shell, on-line help, task swapping, full screen editor, & more are all awaiting you w/MS-DOS 5 Upgrade. Upgrade your current DOS with ease to MS-DOS 5 Upgrade for only . . . **$49.**

HARDWARE

Warranties listed next to manufacturer.

American Power ... 2 years
7108 Smart UPS 400 . . . . . 339.
7105 Smart UPS 600 . . . . . 425.
3858 Back-UPS 400 . . . . . 185.
3823 Back-UPS 600 . . . . . 299.

Appoint ... limited lifetime
2469 Thumbelina PC . . . . . 62.
2480 Mouse Pen Pro PC. . . . . 62.

ATI Technologies ... 2 years
9821 VGA Basic-16 *(640 x 480, 16 colors)*. . . . . 69.
9985 VGA Integra *(1024 x 768, 16 colors)* . . . . . 95.
2706 VGA Wonder XL *(with 1 MB)*. . . . . 199.
2382 Graphics Vantage VGA *(with 1 MB)* . . . . 359.
9822 8514/Ultra *(with 1 MB) (requires VGA)* . . . 419.
2012 Graphics Ultra with VGA *(with 1 MB)*. . . . 479.
1825 2400etc/i Modem *(with 9600 SendFax)* . 139.
9620 9600etc/e Modem . . . . . 369.
3902 Stereo•F/X . . . . . 149.
3900 VGA Stereo•F/X *(w/512K, upgrd. to 1 MB)* 329.

Boca Research ... 5 years
7150 BOCARAM/AT PLUS *(2 MB)* . . . . . 209.
7139 *(4 MB)* . . . . 319. 7138 *(8 MB)* . . . . 529.
6998 I/O Board for AT . . . . . 49.
6999 I/O Board for Microchannel *(S/S/P)*. . . . . 95.
8380 BasicVGA *(256K, 640 x 480)* . . . . . 49.
8381 SuperVGA *(1 MB, 1024 x 768)* : . . . . . 119.
3859 2400 Internal Modem *(V.42, MNP Level 5)* 85.
2502 2400 Internal Modem. . . . . 49.

Bravo Communications ... 2 years
7400 2 Position Laser Compatible Switch Box. 109.

Brown-Wagh ... 1 year
8578 Creative Labs Sound Blaster . . . . . 109.
2336 Creative Labs Sound Blaster Pro . . . . . 189.

Caere ... 1 year
8158 Typist Plus Graphics. . . . . 389.

Canon ... 1 year
We are an authorized Canon Service Center.
7894 BJ-10ex Printer *(4.6 lb.)* . . . . . 329.
7897 BubbleJet Ink Cartridge *(BJ-10ex)* . . . . . 23.
7896 BJ-10ex Sheet Feeder . . . . . 75.

Cardinal ... 1 year
2719 MB2296SR Internal Send/Receive Fax. . 105.
1132 386-SX-16 Motherboard ØK . . . . . 279.
1197 386-SX-25 Motherboard ØK . . . . . 349.
2721 VGA732 True Color Ultra VGA Card . . . . 185.
1480 Cardinal 9600 Internal Modem. . . . . 329.
2783 Cardinal 9600 External Modem . . . . . 349.

CH Products ... 1 year
7935 Game Card III Auto . . 33. 7341 MCA . . 49.
7801 FlightStick with Falcon . . . . . 49.

Colorado Memory Systems ... 1 year
4194 Jumbo 120 Tape Backup . . . . . 199.
4354 Jumbo 250 Tape Backup. . . . . 269.

anniversary year.

Zoom Telephonics/Delrina Technology
Zoom 24/96 Fax Modem/Delrina WinFax Pro Bundle–Get this great 9600 bps send/receive fax with 2400 baud modem along with Delrina's WinFax Pro at a special price. Offer good thru 4/30/92. 4400 *Int. Bundle* **$155.** 4401 *Ext. Bundle* **$159.**

Kensington Microware ... 1 year
Full line available. Partial listing.
4973 PowerTree 20 *(6 outlets, EMI/RFI Filtering)* $27.
2582 Master Piece Plus. . . . . 99.
7899 Expert Mouse *serial* . . 99. 7900 *bus* . . 115.
3311 MasterStand. . . . . 59.
3312 LaserStand *(for HP LaserJet)* . . . . . 125.

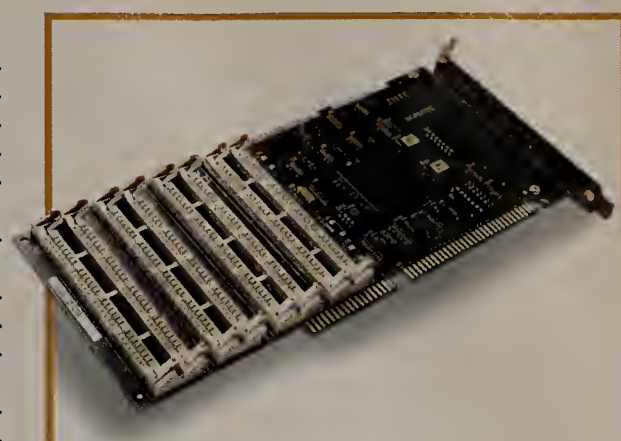
Keytronic ... 3 years
4518 101 Plus Keyboard . . . . . 99.

Kraft ... 5 years
5801 Game Card *(2 ports)* . . . . . 27.
5813 Game Card with Thunderstick . . . . . 49.
5800 3 button Thunder Joystick . . . . . 29.

Logitech ... limited lifetime
6029 Trackman *serial* . . . . . 69.
2343 Trackman Portable . . . . . 99.
7975 ScanMan 256 . . . . . 289.
1322 FotoMan *(camera for your PC)* . . . . . 549.
4727 Kids Mouse . . . . . 45.
3295 MouseMan *(combo)* 69. 9766 *(cordless)* 89.

Megahertz ... 5 years
3020 T224FM 96/24 Pocket Fax Modem . . . . 249.
1187 T324FM 96/24 Fax Modem *(Toshiba Lptps.)* 269.

Micron Technology ... 2 years
7595 2 MB Expansion for HP LaserJet IIP or III 119.



Intel ... 5 years
1086 *Matched Memory Classic Memory Board ØK*–Great performance with a great price to match. EMS 4.0 compatibility built in to the hardware for up to 90% faster processing. Expandable to 8 MB using 1 MB SIMMs . . . . . **$139.**

Curtis ... lifetime
1708 Ruby-Plus SPF-2+ . . . . . 65.
7358 Command Center SPF-4 . . . . . 89.

Cyrix Corporation ... 5 years
MATH COPROCESSORS
9875 FasMath 83D87-25 . . . . . 165.
9876 FasMath 83D87-33 . . . . . 175.
9877 FasMath 83S87-16 *(SX compatible)* . . . . 105.

Epson ... 2 years
We are an authorized Epson Service Center.
1906 FX-850 *(80 col., 264 cps, 9 pin)* . . . . . 319.
1904 FX-1050 *(136 col., 264 cps, 9 pin)* . . . . . 449.
2358 LQ-570 *(80 col., 252 cps)*. . . . . 289.
2361 LQ-870 *(80 col., 330 cps)*. . . . . 489.
2357 LQ-1170 *(136 col., 330 cps)* . . . . . 669.
5184 LX-810 *(80 col., 180 cps, 9 pin)*. . . . . 185.

Everex ... 1 year
1683 Tempo LX Notebook *(5 MB, 60 MB HD)*. . call

Hauppauge Computer ... 1 year
9870 25 MHz 386N Motherboard for AT *(1 MB)* 729.
9034 33 MHz 386N Motherboard for AT *(1 MB)* 789.

Hayes ... 2 years
7391 ULTRA 96 Modem . . . . . 669.
5024 ULTRA 144 Modem . . . . . 799.
1345 OPTIMA 24 Modem . . . . . 155.
3522 OPTIMA 96 Modem. . . . . 389.
9884 Pocket Edition 2400 . . . . . 119.

Hewlett-Packard ... 1 year
3957 LaserJet IIP Plus *(with toner)* . . . . . 879.
9993 LaserJet IIIP *(with toner)*. . . . . 1099.
6754 LaserJet III *(with toner)* . . . . . 1599.

Intel ... 5 years
3864 14.4EX Modem . . . . . 549.
6421 2400B MNP Internal Modem . . . . . 189.
6420 2400EX MNP Modem . . . . . 225.
7880 9600EX Modem. . . . . 469.
5336 Above Board Plus 8 2 MB . . . . . 429.
5342 Above Board Plus 8 I/O 2 MB. . . . . 459.
1086 Matched Memory Classic Memory Brd. ØK 139.
7782 SatisFAXtion *(fax board)*. . . . . 389.
8903 Matched Memory 4 MB *(PS/2)*. . . . . 239.
Matched Memory *(for LaserJet IIP, III, IIIP IIID)*
1810 1 MB . . . . . 79. 1787 2 MB . . . . . 149.
3076 Snap-In 386 *(for PS/2 50/60)* . . . . . 389.
3358 Power Pak *(Snap-In 386 & Above Board Microchannel 4 MB)*. . . . . 925.
MATH COPROCESSORS
7385 80287XL *(16 MHz 80286 CPU's)* . . . . . 89.
4750 80387SX *(16 MHz 80386SX CPU's)* . . . . 129.
6830 80387SX-20 *(20 MHz 80386SX CPU's)* . 139.
5409 80387-33 *(80386DX CPU's)*. . . . . 219.

Hayes ... 2 years
1345 *OPTIMA 24 Modem*–An affordable high-speed V.42bis modem with the reliability and quality that made Hayes famous. Supports throughput up to 9600 bps. Incl. Smartcom EZ communication software . . . . . **$155.**

Microsoft ... lifetime
7597 Microsoft Mouse *(bus or serial)*. . . . . 85.
2897 Mouse with Paintbrush *(bus or serial)* . . . . 99.
2898 Mouse with Windows 3.0 *(bus or serial)* . 149.
1896 Ballpoint Mouse *(serial only)* . . . . . 119.

MicroSpeed ... 1 year
2763 MicroTRAC *(serial & PS/2 interface)* . . . . . 57.
6330 PC-TRAC Trackball *(PS/2)* . . . . . 79.
6007 *serial* . . . . . 75. 6008 *bus* . . . . . 89.

Microtek ... 1 year
2736 ScanMaker 600G *(gray-scale scanner)*. . 759.
2739 ScanMaker 600Z *(color scanner)* . . . . . 1249.
2740 ScanMaker 1850 *(slide scanner)*. . . . . 1649.

Mouse Systems ... lifetime
5997 Trackball *(1 yr. wrnty.) serial*. . 49. *bus*. . 59.
3213 PC Trackball II *(serial)* . . . . . 69.
7878 PC Mouse III *(serial)* . . . . 89. *(bus)* . . . . 95.

NEC ... 2 years
9441 CDR-36 Portable CD-ROM Drive . . . . . 399.
5161 CDR-73 CD-ROM Drive . . . . . 589.
2478 CD Gallery with CDR36 for PC . . . . . 579.
4252 Multisync 3FGX Monitor *(14")* . . . . . 689.
4249 Multisync 4FG Monitor *(15")* . . . . . 799.

Okidata ... 1 year
We are an authorized Okidata Service Center.
5093 *OL400 Page Printer (4 ppm)*. . . . . 649.
5094 OL830 Page Printer *(8 ppm)*. . . . . 1329.
3025 Toner Cartridge . . . . . 25.

Orchid Technology ... 4 years
7863 ProDesigner VGA IIS *(with 1 MB, includes RAMDAC chip)*. . . . . 249.
4071 Fahrenheit 1280i with 1 MB . . . . . 365.

Pacific Data ... lifetime/60 day MBG
5072 25 Cartridges in One! *(for DeskJet 500)* . 109.
5071 25 Cartridges in One! *(for DeskJet Plus)* . 109.
6779 25 Cartridges in One! *(LJ II, IID, IIP, III, IIID)* 269.
8975 Complete Font Library *(LJ III, IIID, IIIP)* . . 265.
Memory upgrade for LJ IIP, III, IIID, IIIP:
7055 *2 MB* . . . . . 139. 7759 *4 MB* . . . . . 259.
Memory upgrade for LaserJet II/IID:
6838 *2 MB* . . . . . 249. 6836 *4 MB* . . . . . 369.
8090 Pacific Connect with 1.25 MB. . . . . 349.

Pacific Data ... lifetime/60 day MBG
9833 *PacificPage XL for HP LaserJet IIP/III/IIID/IIIP*–High-speed PostScript emulation cartridge & accelerator board with 2 MB of memory. Output up to 8 times faster than stand-alone cartridges. 60 Day Money-Back Guarantee **$699.**

1-800/800-0003

MMC

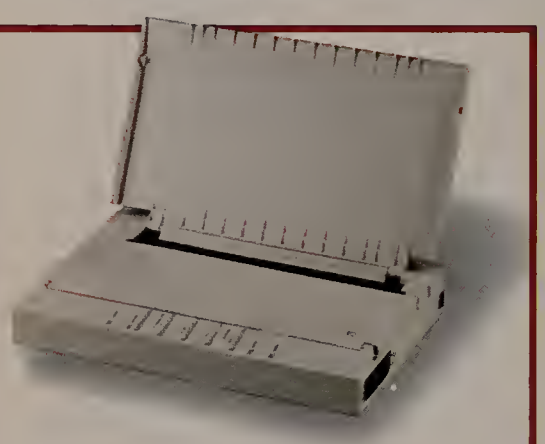
PC Connection 950W
6 Mill Street
Marlow, NH 03456
SALES 603/446-7721 **FAX** 603/446-7791

PC CONNECTION®

© COPYRIGHT PC CONNECTION, INC., 1992. PC CONNECTION, PCTV AND THE RACCOON CHARACTER(S) ARE REGISTERED TRADEMARKS OF PC CONNECTION, INC., MARLOW, NH. ALL OTHER TRADEMARKS REMAIN THE PROPERTY OF THEIR RESPECTIVE COMPANIES.

We're 10 years old!

7158	Pacific Page PE *(LJ IID, IIP, III, IIID, IIIP)*	$369.
6834	Pacific Page *(for LJ II)* w/2 MB Mem. Brd.	369.
9833	Pacific Page XL *(w/accelerator board)*	699.
	PC Power & Cooling ... 2 years	
	REPLACEMENT POWER SUPPLIES	
3203	Turbo Cool 200	149.
7915	Turbo Cool 300	159.
	Practical Peripherals ... lifetime	
3103	2400 Baud Internal Modem	79.
3102	2400 Baud External Modem	169.
8993	2400 Baud Internal Modem *(V.42 bis)*	165.
8994	2400 Baud External Modem *(V.42 bis)*	199.
4542	2400 Baud Internal Modem for PS/2	229.
8132	PM2400 Pocket Modem	109.
2266	PM9600 Internal Modem	399.
7934	PM9600SA Modem	469.
2264	PM2400FX96 *(int. modem/fax board)*	95.
2425	PM14400FXSA Modem/Fax	399.
	Prometheus ... 2 years	
1222	ProModem Ultima Home Office	489.
	Targus ... lifetime	
1305	Universal Notebook *(computer case)*	69.
	TheComplete PC ... 2 years	
5828	TheComplete Communicator	299.
	Tripp Lite ... 2 years	
6199	Isobar 4-6 *(4 outlets, Gold Seal Warranty)*	49.
6200	Isobar 6-6 *(6 outlets, Gold Seal Warranty)*	59.
6201	Isobar 8-12 *(8 outlets, Gold Seal Warranty)*	69.
6018	LC1200 *(1200 Watt Line Conditioner)*	159.
	Video 7 ... 7 years	
9768	VRAM II VGA 1 MB	329.
	Zoom Telephonics ... 7 years	
1307	Int. 2400 Baud w/9600 Baud Fax Modem	105.
1178	Ext. 2400 Baud w/9600 Baud Fax Modem	115.
1181	2400 Baud V.42 bis Modem *(2 year)*	115.
3574	Ext. 2400 Baud V.42/9600 Baud Fax	145.
1167	2400 Baud Internal Modem	65.
1166	2400 Baud External Modem	69.
3075	9600 V.32 Turbo Internal Modem *(2 yr.)*	329.
1494	9600 V.32 Turbo External Modem *(2 yr.)*	329.
4400	24/96 Int. Fax Modem/WinFax Pro Bundle	155.
4401	24/96 Ext. Fax Modem/WinFax Pro Bundle	159.



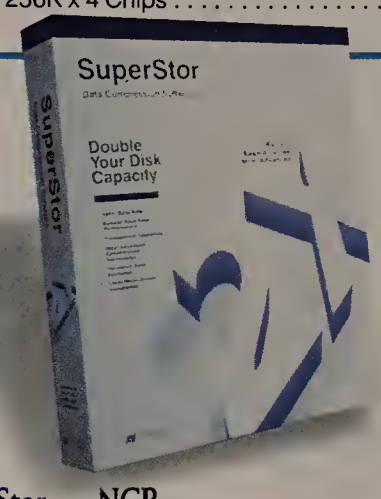
Canon ... 1 year
7894 *BJ-10ex Printer*–New enhanced version of the popular 4.6 lb. printer provides laser-like print quality (up to 360 dpi) on plain bond paper, envelopes or transparencies. Available in white or gray ..... $329.

DRIVES

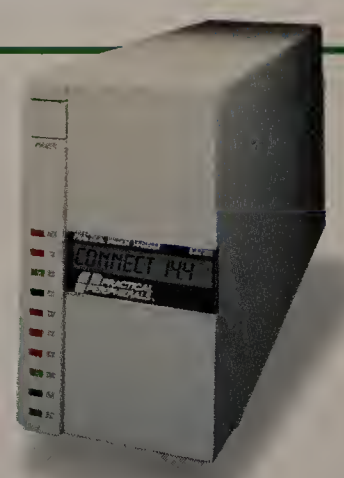
	Conner Peripherals ... 1 year	
2339	CP30104 120 MB IDE HD *(19 ms)*	399.
1337	CP3204 200 MB IDE HD *(16 ms)*	599.
	IOMEGA ... 1 year	
	We are an authorized Iomega Service Center.	
2224	Bernoulli II Transportable 90 MB	799.
2616	Internal 90 MB Bernoulli	799.
2500	PC2B Controller	199.
2530	90 MB Cartridge	149.
2467	90 MB Cartridge Tripak	439.
	Mountain Network Solutions ... 2 years	
2917	40-60 MB Internal Tape Drive	259.
6153	DC2120 Tape Cartridge *(5 pack)*	149.
	Pacific Rim ... 1 year	
1304	1.2 MB External *(for any parallel port)*	$239.
2761	1.44EX MB External *(for any parallel port)*	239.
	Quantum ... 2 years	
8304	Plus Hardcard II XL 50 MB *(9 ms)*	299.
8287	Plus Hardcard II XL 105 MB *(9 ms)*	449.
4060	105 MB Drive Kit for MC PS/2's *(13 ms)*	789.
	TEAC ... 1 year	
4670	1.44 MB Drive for PC/XT *(3½")*	59.
4326	1.44 MB Drive for AT *(3½", w/Bastech)*	79.
4951	720k Drive for PC/XT *(3½")*	55.
6951	1.2 MB Drive for AT *(5¼")*	65.

MEMORY

6556	256k DRAM *(100 ns, set of 9)*	19.
5510	1 MB x 9 SIMMs *(80 nanosecond)*	49.
2497	4 MB x 9 SIMMs *(80 nanosecond)*	179.
5746	1 MB Chips *(80 ns, set of 9)*	49.
7813	256K x 4 Chips	ea. 7.



AddStor ... NCP
4090 ▣*SuperStor 2.0*–Doubles your disk capacity with an advanced, feature rich software only data compression product. Easy to install and use. Compatible with Windows and all applications ..... $83.



Practical Peripherals ... lifetime
2425 *PM14400FXSA Modem/Fax*–Get ultra high speed 14,400 bps data transmission as well as Group III S/R fax capabilities in one integrated and affordable package. Includes QuickLink II for modem and fax communications .. $399.

DISKS/MEDIA

	Fuji ... lifetime	
2215	3½" HD Disks *(10)*	15.
2241	*(50)*	69.
2239	3½" HD Disks Color *(Qty. 10)*	18.
2214	3½" DS Disks *(10)*	9.
2242	*(50)*	39.
2243	3½" DS Disks Color *(Qty. 10)*	10.
	Fuji ¼" Data Cartridges	call
	Sony ... lifetime	
3291	5¼" DS/DD 360k Disks *(Qty. 10)*	7.
3292	5¼" HD Disks *(Qty. 10)*	12.
3297	3½" DS Disks *(10)*	$9.
6148	*(30)*	$25.
3298	3½" HD Disks *(10)*	15.
6375	*(30)*	42.
1603	DG60M 4mm Data Cartridge *(1.3 GB)*	16.
2520	DG90M 4mm Data Cartridge *(2 GB)*	22.
1609	QG112M 8mm Data Cartridge *(5 GB)*	15.
8185	QD2040 Tape Cartridge	14.
3988	QD2080	19.
1895	QD2120	21.
6715	QD6150	23.
1602	QD6250	29.
	3M ... lifetime	
3943	DC2000	17.
1581	DC2120	24.

OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order (in the U.S.).
- No sales tax, except Ohio residents (please add applicable tax).
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail.
- International orders U.S. $250 minimum. Manufacturer support and upgrade eligibility may be limited outside the U.S.A.
- Upon receipt and approval, personal and company checks clear the same day for immediate shipment of your order.
- Corporate P.O.s accepted subject to approval.
- COD max. $1000. Cash or cashier's check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- To order, call us Monday through Friday 8:00 a.m. to 1:00 a.m., or Saturday 9:00 a.m. to 5:30 p.m. Eastern Time. You can call our business offices at 603/446-3383 Monday through Friday 9:00 a.m. to 5:30 p.m.

IOMEGA ... 1 year
2224 *Bernoulli II Transportable 90 MB*–Rugged and built to last, this drive will absorb 1000 g's of shock and provide 90 MB of portable storage. Awards from *Byte* and *InfoWorld*. Requires adapter card ..... $799.

SHIPPING

Note: Accounts on net terms pay actual shipping.

Continental US:
- For heavy hardware items such as printers, monitors, Bernoulli Boxes, etc. pay actual charges. Call for UPS 2nd-Day & Next-Day-Air.
- For all other items, add $3 per order to cover UPS Shipping. For such items, we automatically use Airborne Express at no extra charge if you are more than 2 days from us by UPS ground.

Hawaii:
- For monitors, printers, Bernoullis, computers, hard drives, and power backups, actual UPS Blue charge will be added. For all other items, add $3 per order.

Alaska and outside Continental US:
- Call 603/446-7721 for information.

PC Parade.

From Marlow to Main Street.
(Or, a decade of service to beat the band.)

Back in July of '82, shortly after the introduction of the IBM-PC, we marched (to the beat of a different drummer, of course) smack dab into the middle of the PC marketplace. Our idea was simple—to sell add-ons and software exclusively for IBM personal computers. Our first warehouse was even simpler—a closet in a converted sawmill in the one-horse (or was that a moose?) town of Marlow, NH (pop. 542 at the time). Our goals were rather modest, too—we just wanted to be the fastest, most convenient, and most reliable source for PC products anywhere on Planet Earth.

Over the last ten years, we've learned that our small-town values play pretty well across America. And that anything humans can do, our high-stepping raccoon mascots can do better. So as our first decade draws to a close, we'd like to thank all our customers for making it so successful. May it never rain on your PC parade!

We'll give you the shirt off our backs!

The Official PC Connection 10th Anniversary Shirt, that is. A collector's item that can be worn with pride and panache at road races, corporate volleyball games, and even user-group meetings. It's free to anyone who places an order of $750 or more between now and June 30. Specify S, M, L, XL or children's.

Display your micro muscles with the all-cotton PC Connection 10th Anniverary Shirt. One per customer. Not available to net accounts.

PC CONNECTION®

©COPYRIGHT PC CONNECTION, INC., 1992. PC CONNECTION AND THE RACCOON CHARACTER(S) ARE REGISTERED TRADEMARKS OF PC CONNECTION, INC., MARLOW, NH.

FULL-PAGE SCAN

WHETHER YOU WANT TO ADD A PHOTO TO A PROPOSAL OR TURN A STACK OF DOCUMENTS INTO ASCII TEXT, ONE OF THESE 38 DESKTOP SCANNERS CAN DO THE JOB FOR LESS MONEY THAN YOU THINK.

Once an expensive piece of exotica for graphic artists, the desktop scanner is beginning to pop up everywhere. A couple years ago, a 300-dpi gray-scale scanner cost more than $2000, but today you can buy a 400-dpi full-color scanner on the street for just over $1000, and a 300-dpi gray-scale scanner can be had for about $800.

Most of the desktop scanners listed here are flatbed scanners. They operate much like personal copiers—you lift the hood, place a piece of paper on the glass, close the hood, and scan. Moments later an identical facsimile appears as an image file on your PC's hard disk, ready to be edited, popped into a document, or converted into editable ASCII text. The few sheet-fed scanners included here operate in the same way, except you insert the page into a roller mechanism similar to a fax machine's. With the exception of the Niscan Spectra, all the scanners listed here come with an expansion board, so make sure your PC has a free slot for it.

Scanners are a multitalented lot—your work group may end up using one for a number of different applications. The main

LANCE JACKSON/LAX SYNTAX

NERS

BY PATRICK MARSHALL

task is to convert photographs and artwork into electronic images for use in desktop-published documents, slide presentations, or multimedia applications. The other chief occupation is to transform hard copy text into editable documents via optical character recognition (OCR) software. OCR lets you convert documents created by typewriter or archaic computers, as well as turn faxes and mail into live copy (see "OCR: Image Into Words").

But desktop publishing and OCR are just the beginning. As mass storage devices grow cheaper, many businesses that rely on paper forms, such as insurance companies, are finding they can save money on labor, storage, and office space by scanning all their important documents onto a file server's optical disk or large hard disk. Retrieving an electronically archived document is much faster than sending a clerk to hunt through the files, and image management packages let you use a variety of search tools and tag documents with text annotations.

The increasing use of PC-based fax also provides an opening for scanners. If you equip your computers with fax boards, a shared scanner can eliminate the need for a fax machine altogether. And the higher resolution scanners will result in higher quality faxed images. Sharing both scanner and fax with a networked fax gateway is especially cost effective.

BLACK AND WHITE, GRAY SCALE, OR COLOR?

One of the first questions a scanner buyer needs to ask is whether to go with a black-and-white scanner, a gray-scale unit, or a color scanner. If you won't be using a color printer or sending scanned images to 35mm slides or multimedia, there's little reason to pay extra for a color unit; if you won't be scanning color originals there's no reason for it. But if you're not sure, you may as well go with color—the price is not much higher, and all color units are also capable of handling 256 shades of gray.

The same reasoning holds true for those interested in OCR. If all you're going to scan is text, a black-and-white scanner will do. But if you want more flexibility, opt for a gray-scale or color scan-

ner and buy an OCR package that will work on the unit. After all, at $1295 the most expensive of the 300-dpi black-and-white scanners is actually $300 more than the least expensive of the 300-dpi full-page color scanners. Price differences among scanners often depend on extras such as bundled OCR and image editing software and accessories such as sheet feeders.

A PLAN TO SCAN

The scanner features you need to look for depend on whether you're doing desktop publishing, fax, OCR, or another application.

SHEET FEEDER. If you plan to do a lot of text scanning, you'll want a system that offers a sheet feeder. With this $500 to $700 accessory, you can set a stack of pages in an input tray instead of having to insert, align, and remove each original. The black-and-white scanners from Microtek and New Dest and the gray-scale scanner from Prime Option include sheet feeders standard, but because they lack a flatbed option, you can't scan oversize pages or irregularly shaped objects, such as bound books. The only flatbed scanner that comes standard with a sheet feeder is the SIIG AV800.

RESOLUTION. The resolution of scanners is measured in dots per inch (dpi). Most scanners have a maximum resolution of 300 dpi, though a few go up to 400 dpi. The general rule is, the higher the scanning resolution, the better the output, at least until you've reached the resolution limit of the output device.

If you plan to output on a 300-dpi device, higher scanning resolutions are generally wasted. One exception: If you're enlarging a scanned image before you print, scanning at 400 dpi means you'll be able to enlarge without losing as much output sharpness.

If you're using a higher resolution imagesetter, such as a 1200-dpi Linotronic, you'll want to check out one of the 400-dpi units listed here—or get a high-priced, professional-quality scanner with 600-dpi resolution or higher. Similarly, if you need high-quality scanned images for slides, 300-dpi probably won't cut it.

Keep in mind that when you scan at higher resolutions, the image file takes up much more disk space, and scanning and printing take longer. The more choices of resolution available, the more you can fine-tune the compromise between image quality and file size.

Some units increase apparent resolution without increasing file size through a technique called *interpolation*. Interpolation software (bundled on disk or built into the unit itself) employs a mathematical algorithm that fills in the gaps between dots, smoothing curves that would otherwise appear jagged. Many scanner vendors claim an "effective" resolution of 600 dpi for their 300-dpi scanners using interpolation. The quality isn't quite the same as it would be if you bought a true 600-dpi scanner, and it isn't much better than that of a true 400-dpi scanner that lacks interpolation. However, interpolation can be a cost-effective way to improve image quality without losing more hard disk space to images.

GRAY SCALE. If you're scanning line art or text only, a black-and-white scanner is all you need. If you need to print images that approximate photographic quality, you should move up to a scanner that can recognize and translate 64 to 256 shades of gray. As with resolution, more shades mean a larger image file, but they also vastly improve the reproduction of continuous-tone images.

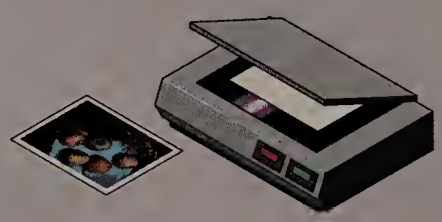
Most of the black-and-white units bundle software that simulate up to 16 or 64 gray shades through a process called *dithering*. This algorithmic technique simulates the halftone cells in a continuous-tone image by applying graded patterns. Certain dithering patterns can provide pleasing visual effects on 300-dpi or lower output devices, though none come close to the quality of shading.

COLOR. Most color scanners can handle nearly 16.8 million hues (24-bit color)—plenty for

DIFFERENT SCANNERS FOR DIFFERENT APPLICATIONS

The right scanner for you depends on how you plan to use it. Desktop publishing, OCR, and other jobs require different features.

High-end desktop publishing

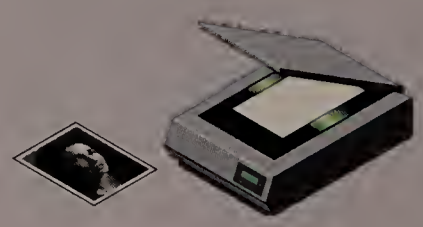


600-dpi color/ gray-scale scanner

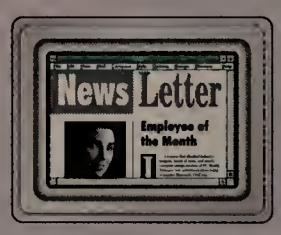
Desktop publishing application

1200/2400-dpi imagesetter

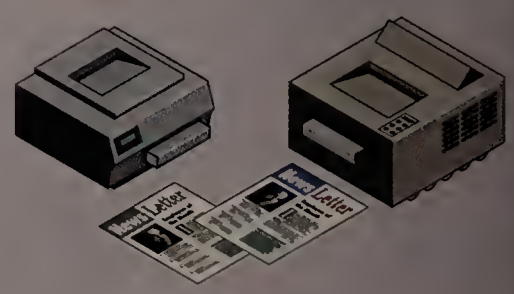
Low-end desktop publishing



300-dpi color/ gray-scale scanner



Desktop publishing or word processing application



300-dpi laser or color thermal-transfer printer

PC WORLD

SUPER SAVINGS CERTIFICATE

FREE!
Power Base*.* Disk
50 Tips, Macros and Utilities!

☐ **YES! I Want to save almost 58%. Send me one year (12 issues) of PC WORLD for only $19.97. I'll save 33% off the regular subscription rate, and almost 58% off the annual newsstand price. Plus I get PC WORLD'S PowerBase*.* macros/utilities disk–FREE–with my subscription.**

NAME

COMPANY

ADDRESS

CITY, STATE, ZIP

CALL 1 800-825-7595 or FAX 1 415-882-0936

Basic annual subscription price is $29.90. Savings based on annual newsstand price of $47.40. Please allow 6 to 8 weeks for delivery. Offer good only in the U.S. PowerBase*.* diskette is offered solely by PC WORLD Magazine. It should not be confused with 'power-base' which is database software offered by Compuware Corporation.

Recycled Paper

4HY 84

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

HOW ABOUT HAND SCANNERS?

Before you look into a desktop scanner, you may want to consider a hand scanner (see "Buyers' Guide: Hand Scanners," November 1991). A 256 gray-scale unit that can handle resolutions up to 400 dots per inch (dpi) costs as little as $300—compared to about $900 to $1000 for a similar desktop unit. Besides being very affordable, a hand-held scanner doesn't take up desk space.

Still, hand scanners have their drawbacks. First, since you must move it across the image, you need a steady hand to avoid frequent rescans. And because hand units are only 4 inches wide, you'll have to go through the tricky process of merging multiple scans in order to capture large images. Hand scanners are great for scanning small images for publishing or for scanning the occasional published article for conversion by OCR software. But if you plan to do a lot of scanning, especially of larger images, or if you perform regular OCR work, the extra price for a desktop unit is worth it.

any job. A color scanner is simply a gray-scale scanner with color filters, so it doubles as a gray-scale scanner. Another advantage of color: If you're scanning color images with a gray-scale scanner, certain colors tend to drop out (usually a shade of yellow or green). But with a color scanner, there's no dropout, so you'll get better output even on a black-and-white printer by printing the color file.

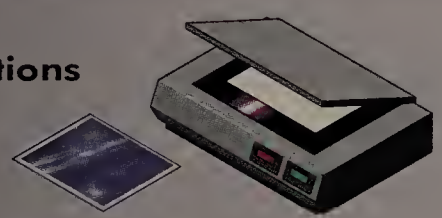
Some color scanners have multiple scanning lamps, so you can perform a color scan in a single pass. Others rely on a single lamp that shines through red, green, and blue filters in successive passes. Debate about whether single-pass or three-pass scanners provide better color registrations is ongoing, but our experience shows you can't judge the quality simply based on the scanning technique. Because they must perform three scans, however, three-pass scanners take longer to process a page.

SPEED. Beware of speed claims made by vendors. The speed of a scan depends primarily on resolution and the number of gray shades or colors—the harder you make your scanner work, the slower it will scan. Some manufacturers report only their fastest scan, and some report only their highest resolution speed.

PRESCAN CONTROLS. Most scanners bundle a single package that covers both the prescan utility used to control the actual scan and postscan image-editing software. With most of the units, the prescan software determines whether you can adjust the brightness and contrast of an image before you scan and whether you have prescan commands to flip or scale images. You can always make such adjustments in postscan editing, but doing it before is faster and easier.

POSTSCAN EDITING. Postscan editing is a concern primarily for desktop publishers. Most of the bundled image editors provide basic painting tools for altering images, cleaning up errant pixels, adjusting contrast, performing cut and

Presentations



600-dpi color/gray-scale scanner

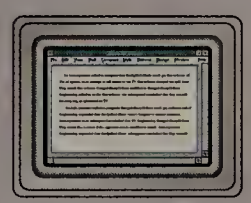
Business presentations or multimedia package

35mm slides or CD ROM, 300-dpi color thermal-transfer printer

OCR

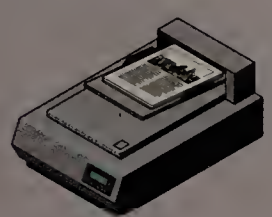
300-to-400-dpi black-and-white scanner with sheet feeder

OCR application



Word processing application

Document storage and retrieval



300-dpi black-and-white scanner with sheet feeder

Document/image management package

Read/write optical disk

FULL-PAGE SCANNERS

Manufacturer	Product	Price	Maximum scan size (inches)	Sheet-feeder cast	Sheet-feeder capacity (sheets)	Optical resolution (dpi)[1]	Maximum resolution with interpolation (dpi)	Shades of gray	Colors
BLACK-AND-WHITE									
THE COMPLETE PC	The Complete Page Scanner	$899	8.5 x 14	n/a	n/a	200–300	n/a	n/a	n/a
EVEREX SYSTEMS (ABATON)	TranScribe 300	$1095	8.5 x 11.75	$495	20	72–300	n/a	n/a	n/a
MICROTEK LAB	MS-II	$995	8.5 x 14	free	50	75–300	600	n/a	n/a
NEW DEST	Personal Scan 100	$995	8.5 x 14	free	1	100–400	n/a	n/a	n/a
PANASONIC	FX-RS505U	$1149	8.5 x 14	n/a	n/a	200–400	n/a	n/a	n/a
UMAX TECHNOLOGIES	UF32	$1295	8.5 x 14	$495	25	3–300	n/a	n/a	n/a
	UF42	$1650	8.5 x 14	$495	25	4–400	n/a	n/a	n/a
GRAY SCALE									
ADVANCED VISION RESEARCH	3000 GS Plus	$1590	8.5 x 14	$795	100	4–300	600	256	n/a
	8000 GSX	$1690	8.5 x 14	$795	100	4–400	600	256	n/a
ALPS AMERICA	PSX300g	$1795	8.5 x 14	$695	100	12–300	600	256	n/a
CANON USA	IX-30F	$1545	8.5 x 12[6]	$595	20	75–300	n/a	256	n/a
THE COMPLETE PC	The Complete Flatbed Scanner	$1599	8.5 x 14	n/a	n/a	75–300	n/a	256	n/a
EVEREX SYSTEMS (ABATON)	Scan 300/GS	$1595	8.5 x 14	$595	50	72–300	n/a	256	n/a
HEWLETT-PACKARD	ScanJet Plus	$1590	8.5 x 11.7	$595	20	12–300	600	256	n/a
MICROTEK LAB	ScanMaker 600G	$1199	8.5 x 13.5	$699	100	75–300	600	256	n/a
NEW DEST	PC Scan 3000	$1575	8.5 x 11.7	$695	25	38–300	600	256	n/a
PANASONIC	FX-RS506U	$1299	8.5 x 14	$649	30	50–400	n/a	16	n/a
	FX-RS307U	$1299	8.5 x 14	$649	30	50–300	600	256	n/a
PENTAX	Pentax IQ Scan (SB-L301)	$995	8.5 x 14	$695	30	39–300	n/a	16	n/a
PRIME OPTION	Phovos 600GS	$1995	8.5 x 14	free	30	40–600	1400	256	n/a
UMAX TECHNOLOGIES	UG630	$1555	8.5 x 14	$495	25	1–300	600	256	n/a
COLOR									
ADVANCED VISION RESEARCH	3000 CL Plus	$1890	8.5 x 14	$795	100	3–300	1600	256	16.8 mil.
	8000 CLX	$2190	8.5 x 14	$795	100	4–400	1600	256	16.8 mil.
CHINON AMERICA	DS-3000	$995	8.5 x 11	n/a	n/a	75–300[7]	n/a	256	4096
EPSON AMERICA	ES-300C	$2194	8.5 x 11.7	n/a	n/a	50–300	600	256	16.8 mil.
EVEREX SYSTEMS (ABATON)	Scan 300/Color	$1995	8.5 x 14	$595	50	72–300	n/a	256	16.8 mil.
HEWLETT-PACKARD	ScanJet IIc	$2195	8.5 x 14	$695	50	12–400	800	256	16.8 mil.
HOWTEK	Personal Color Scanner	$1295	8.5 x 14	n/a	n/a	50–300	600	256	16.8 mil.
MARSTEK	MFS-3000C	$1295[9]	8.5 x 14	n/a	n/a	100–300	n/a	256	16.8 mil.
	MFS-6000C	$1695[10]	8.5 x 14	n/a	n/a	100–300	600	256	16.8 mil.
MICROTEK LAB	ScanMaker 600Z	$1995	8.5 x 13.5	$699	100	75–300	600	256	16.8 mil.
NISCA	Niscan Spectra	$995	4 x 6	n/a	n/a	50–400	n/a	256	16.8 mil.
OUR BUSINESS MACHINES	PS-3000/OCR	$995	8.5 x 14	n/a	n/a	75–300	n/a	256	16.8 mil.
PRIME OPTION	Phovos 300C	$1495	8.5 x 11	n/a	n/a	50–300	600	256	16.8 mil.
SHARP ELECTRONICS	JX-320	$2195[4]	8.5 x 11	n/a	n/a	30–300	600	256	16.8 mil.
SIIG	AV800	$2195	8.5 x 11[6]	free	50	0–300	n/a	256	256
ULTIMA ELECTRONICS	Artec A4000C	$1300	8.5 x 14	$600	50	70–300	n/a	256	16.8 mil.
UMAX TECHNOLOGIES	UC630	$1995	8.5 x 14	$495	25	1–300	600	256	16.8 mil.

[1] Units that offer 600 dpi and above through interpolation actually have an optical resolution of 600 dpi or higher on one axis but are limited to the indicated resolution on the other axis.

[2] One-page scan at maximum optical resolution; shades, and colors unless otherwise noted.

[3] At 300 dpi.

[4] Windows version.

[5] Extra-cost option.

[6] 8.5 by14 with feeder.

Number of passes for color scan	Vendor-rated speeds[2] (minutes: seconds)	HP ScanJet emulation	Scanning/image-editing software	PRESCAN: Brightness/contrast controls	PRESCAN: Flip/reverse image	PRESCAN: Scale	POSTSCAN: Color separation	POSTSCAN: Filters	POSTSCAN: Merge scans	OCR software	Warranty	Reader service number
n/a	15	N	proprietary	Y	N	N	N	N	N	WordScan	1 year	791
n/a	10	N	N	Y	n/a	n/a	n/a	n/a	n/a	OmniType	1 year	792
n/a	10	N	N	n/a	n/a	n/a	n/a	n/a	n/a	OmniType	1 year	793
n/a	12[3]	N	Image-In[4]	Y	N	N	N	Y	Y	Recognize	1 year	794
n/a	19[3]	N	Scan-Do[4]	N	N	Y	N	N	N	N	1 year	795
n/a	10	N	MicroArt II	Y	N	Y	N	N	Y	WordScan[5]	1 year	796
n/a	18	N	MicroArt II	Y	N	Y	N	N	Y	WordScan[5]	1 year	796
n/a	30	Y	Picture Publisher 3.0,[4] EasyScan	Y	Y	Y	Y	Y	Y	Perceive	2 years	797
n/a	30	Y	Picture Publisher 3.0,[4] EasyScan	Y	Y	Y	Y	Y	Y	Perceive	2 years	797
n/a	18	Y	Image-In[4]	Y	Y	Y	N	Y	Y	Perceive	1 year	798
n/a	10	N	Scan-Do[4]	Y	Y	Y	N	N	N	N	1 year	799
n/a	18	Y	Picture Publisher 3.0[4]	Y	Y	Y	Y	Y	Y	N	1 year	800
n/a	60	N	Picture Publisher 3.0[4]	Y	Y	Y	Y	Y	Y	OmniPage[5]	1 year	801
n/a	10	N	HP Scanning Gallery,[4] PC PaintBrush[4]	Y	Y	Y	N	N	Y	AccuScan[5]	1 year	802
n/a	10	N	PhotoStyler[4]	Y	Y	Y	Y	Y	Y	N	1 year	803
n/a	10.5	N	Image-In[4]	Y	Y	N	Y	N	Y	Recognize[5]	1 year	804
n/a	19[3]	N	Scan-Do[4]	Y	Y	Y	N	N	N	ReadRight[4]	1 year	805
n/a	19[3]	N	PanaScan[4]	Y	Y	Y	N	N	N	N	1 year	805
n/a	17	Y	N	Y	Y	Y	n/a	n/a	n/a	WordScan	1 year	806
n/a	10	N	Picture Publisher 3.0[4]	Y	Y	Y	Y	Y	Y	WordScan	90 days	807
n/a	22	N	Picture Publisher 3.0[4]	Y	Y	Y	Y	Y	Y	WordScan[5]	1 year	808
3	30	Y	Picture Publisher 3.0,[4] EasyScan	Y	Y	Y	Y	Y	N	N	2 years	809
3	30	Y	Picture Publisher 3.0,[4] EasyScan	Y	Y	Y	Y	Y	N	N	2 years	809
3	1:30[8]	N	Colorset	Y	N	N	N	Y	N	WordScan[5]	1 year	810
1	n/a	N	Image-In, Picture Publisher 3.0[4]	Y	Y	Y	N	Y	N	N	1 year	811
3	6	N	ColorLab[4]	Y	Y	Y	N	Y	N	OmniPage[5]	1 year	812
1	15[3]	N	HP DeskScan II,[4] Publisher's Paintbrush[4]	Y	Y	Y	N	Y	Y	N	1 year	813
3	1:30	N	Picture Publisher 3.0,[4] ColorLab,[4] Tempra Pro	Y	N	Y	Y	Y	Y	WordScan[5]	1 year	814
3	2	N	Picture Publisher 3.0[4]	Y	Y	N	N	Y	N	Perceive	1 year	815
3	2:30	N	Picture Publisher 3.0[4]	Y	Y	N	N	Y	N	Perceive	1 year	815
3	2:30[11]	N	PhotoStyler[4]	Y	Y	Y	Y	Y	Y	N	1 year	816
1	45[8]	N	ColorLab,[4] ScanRIX/ColorRIX	Y	N	Y	N	N	Y	N	1 year	817
1	5:18	Y	WinRix[4]	Y	Y	Y	Y	Y	Y	WordScan	1 year	818
1	1:30	N	Picture Publisher 3.0[4]	Y	Y	N	N	Y	N	N	90 days	819
1	2	N	Tempra Pro, Image-In Color[4]	Y	Y	Y	N	Y	Y	N	90 days	820
3	5[12]	Y	N	n/a	n/a	n/a	n/a	n/a	n/a	N	1 year	821
3	1:36	N	FAScinator 2.0	Y	Y	Y	Y	Y	Y	FAScinator OCR[4]	1 year	822
3	2[11]	N	Picture Publisher 3.0[4]	Y	Y	N	N	Y	N	WordScan[5]	1 year	823

[7] 75 dpi maximum for color.
[8] At 75 dpi.
[9] $1395 for PS/2.
[10] $1795 for PS/2.
[11] At 600 dpi.
[12] Black-and-white.

For more information about all products in this table, circle reader service no. 905.

paste, and so forth. These tools are all you need for preparing a fax or scanning in some line art. A very few packages, such as Aldus's *PhotoStyler*, offer special-effects filters, support for color separations, and other prepress controls. Make sure the editor supports the file formats you use in your application. If you plan to buy the software separately, make sure it supports the scanner you'll buy or a scanner that the unit emulates (usually the HP ScanJet).

If you feel tempted to reach for one of the top-of-line units but you don't quite have the money, be patient. Prices have been falling steadily over the past couple years and should continue to drop. If you don't need color, you'll find some real steals.

Patrick Marshall is a freelance writer in Silver Spring, Maryland.

SCANNERS HELP YOU GET THE PICTURE

The Hewlett-Packard ScanJet IIc (the color version of the HP ScanJet Plus) and the Epson ES-300C are both capable of sharp, 24-bit color, and 256-gray-scale scans. Image quality improves if you reduce the image after scanning. The gray-scale image on the left was scanned on the Epson ES-300C and reduced 32 percent. The ScanJet IIc's color scan was reduced 44 percent. A black-and-white scanner like Everex's TranScribe 300 is fine for text or line art (upper right).

OCR: IMAGE INTO WORDS

OPTICAL CHARACTER RECOGNITION (OCR) SOFTWARE CAN REDUCE YOUR CLERICAL COSTS BY LETTING YOU SCAN IN PAPER DOCUMENTS AND TURN THEM INTO EDITABLE FILES.

BY PATRICK MARSHALL

More than half the text we type has already been typed at least once. As companies put more and more of their business on PCs, we end up retyping reams of typewritten documents, published materials, and text files created in old, incompatible data formats.

But now you can give those typists a rest. With optical character recognition software you can scan in text and convert it into editable ASCII text. Although OCR technology has been around for years, only recently have fast, affordable, reasonably accurate OCR packages been available.

A few scanners are optimized for OCR. The Hewlett-Packard ScanJet IIc, for example, preprocesses text, removing stains or background colors, before turning it over to Caere's *OmniPage Professional* software for recognition. However, in most cases the scanner itself has little to do with OCR. Scanning text is no different from scanning black-and-white line art.

Still, you should keep a few hardware factors in mind. Obviously, you'll need to make sure the OCR software you want works with the scanner you plan to buy. A 300-dpi scanner is fine for most type, but if you're scanning smaller fonts or irregular type (such as dot matrix draft output), you'll encounter fewer errors and unrecognized characters at 400 dpi, so your scanner and software should both support 400 dpi. Finally, you'll probably want a sheet feeder that holds as much paper as possible. Scanning speed is not a big factor. Scanning a page of text takes only 5 to 10 seconds, whereas processing that page—even on a fast 386—may take a minute or more.

TRAINABLE VS. OMNIFONT

OCR software comes in two varieties: trainable and omnifont. Trainable software, such as *Advantex* and *Read-It*, matches the scanned-in patterns to a model of the font contained in the software. If the software doesn't recognize a character, it notifies you and asks you to teach it how. Sometimes, you can teach the software a new font after showing it only three or four characters, but even this process can be time-consuming. With some programs you have to go

WHERE TO BUY

Abaton Everex Systems, Inc.
48431 Milmont Dr.
Fremont, CA 94538
800/628-3837,
510/498-1111

Alps America
3553 N. First St.
San Jase, CA 95136
800/825-2577

Advanced Vision Research Inc.
2201 Qume Dr.
San Jase, CA 95131
800/544-6243,
408/434-1115

Canon USA
1 Canon Plaza
Lake Success, NY 11042
516/488-6700,
516/354-5805 (fax)

Chinon America, Inc.
660 Maple Ave.
Tarrance, CA 90503
800/441-0222,
310/533-0274

The Complete PC
1983 Concourse Dr.
San Jase, CA 95131
800/229-1753,
408/434-1048 (fax)

Epson America Inc.
20770 Madrana Ave.
Torrance, CA 90503
800/922-8911,
310/782-0770

Hewlett-Packard Co.
19310 Pruneridge Ave.
Cupertino, CA 95014
800/752-0900,
208/344-4809 (fax)

Howtek, Inc.
21 Park Ave.
Hudsan, NH 03051
800/444-6983,
603/882-5200

Marstek, a division of Mustek
15225 Altan Pkwy.
Irvine, CA 92718
714/833-7740,
714/833-7813 (fax)

Microtek Lab Inc.
680 Knax St.
Torrance, CA 90502
800/654-4160,
310/538-1193 (fax)

New Dest
1015 E. Brokaw Rd.
San Jase, CA 95131
408/436-2700,
408/436-2750

Nisca, Inc.
1919 Old Dentan Rd.
#104
Carrolltan, TX 75006
800/245-7226,
214/245-0942 (fax)

Our Business Machines, Inc.
12901 Ramana Blvd.,
Ste. J
Irwindale, CA 91706
800/433-1435,
818/960-1766 (fax)

Panasonic Communications & Systems Co.
2 Panasonic Way
Secaucus, NJ 07094
800/742-8086,
201/348-7000

Pentax Technologies Corp.
100 Technology Dr.
Braamfield, CO 80021
303/460-1600,
303/460-1628 (fax)

Prime Option
2341 W. 205th St.
Torrance, CA 90501
800/828-9877,
310/618-1982 (fax)

Sharp Electronics Corp.
Sharp Plaza
Mahwah, NJ 07430
800/237-4277,
201/529-9600

SIIG Inc.
6078 Stewart Ave.
Fremont, CA 94538
510/657-8688,
510/657-5962 (fax)

Ultima Electronics Corp.
1156 Aster Ave., Ste. A
Sunnyvale, CA 94086
408/246-9208

Umax Technologies Inc.
3170 Coronado Dr.
Santa Clara, CA 95054
800/562-0311

Xerox Imaging Systems Inc.
9 Centennial Dr.
Peabody, MA 01960
800/248-6550,
508/977-2000

through another training session each time you scan a new size or family of the same font.

Omnifont programs, such as Calera's *WordScan* and Caere's *OmniPage*, are usually more expensive, but they tend to be more powerful and easier to use. They break down each scanned character into the lines, curves, and breaks that comprise it, and then compare those features to an internal data base of character traits. You don't have to train omnifont packages, they're pretty flexible at handling different fonts, and the size of the font is no problem. Still, omnifont packages can get duped by script, italic, and underlined type as well as irregular printing. Some omnifont programs, such as *OmniPage Professional*, also provide a trainable mode, so when you run into trouble you can always train the software manually as a last resort.

Here are other features to check for in an OCR package.

ACCURACY. High-end packages like Calera's *WordScan Plus* and Caere's *OmniPage Professional* turn out copy with a 99 percent accuracy rating. Most others are in the high 90s, but a 1 percent decrease in accuracy could mean ten errors per page instead of five. Also note that vendor accuracy estimates themselves can vary in accuracy.

AUTOMATIC PAGE DECOMPOSITION. Many OCR packages are confused by irregular layouts such as tables, text wrapped around images, and headers and footers. The better programs recognize and isolate these formatting objects—for example, translating snaking columns into a page of continuous text.

DEFERRED PROCESSING. Even the best OCR software is relatively slow, so look for a program that lets you scan multiple pages first and process them later as a group.

ZONING. Sometimes you don't need all the text on a page; zoning lets you process only selected blocks. Zoning templates let you scan selected blocks that always appear in the same location of similar pages—useful for scanning form data into a data base.

JOBS. Most OCR packages let you save sequential pages in one OCR file, but for scanning a lot of text, you'll also want a job separator —usually a blank page—to signal the software to start a new file. That way you can put three 25-page articles in the sheet feeder separated by blank pages, and the program will automatically create three files.

STYLE SHEETS. Some programs let you save style sheets that tell the program how to format documents just as you want them for the destination application, complete with indentations or justification.

SPELLING CHECKERS. Many programs include spelling dictionaries and flag suspicious words. They're especially sensitive to the types of errors to which OCR programs are prone, such as mistaking *t*'s for *l*'s and *c*'s for *e*'s.

VERIFICATION WINDOW. When you run into an error, you don't want to have to find the original document to check the word. With a verification window, you can pop up a window to view the actual scanned image of the document in order to check the word. This feature is a real time-saver.

FAX TRANSLATION. A fax you receive on your fax board is essentially the same as a scanned image. Some OCR packages let you translate fax text into ASCII characters. Calera has even introduced a $149 add-on called *FaxGrabber* that automatically converts faxes from certain fax boards into ASCII text.

OCR has finally arrived at the point where it's worth the trouble. Each new version of these programs improves their accuracy and increases their speed. And for you, that means less time wasted doing tedious retyping.

WHERE TO BUY

AccuText 3.0
Discover 386 5.1
Xerox Imoging Systems
9 Centenniol Dr.
Peobody, MA 01960
800/248-6550
LIST PRICE: Accutext $995, Discover 386 $599
Reader service no. 851

AdvanTex 2.2
Solution Technology
1101 S. Rogers Cir., Bldg.14
Boco Roton, FL 33487
407/241-3210
LIST PRICE: $395
Reader service no. 852

CAT Reader Professional
Computer Aided Technology
10132 Monroe Dr.
Dollos, TX 75229
214/350-0888
LIST PRICE: $495
Reader service no. 853

Image-In Read 2.5
Imoge-In
406 E. 79th St.
Minneopolis, MN 55420
800/345-3540
LIST PRICE: $149
Reader service no. 854

OmniPage Professional 2.0
Coere Corp.
100 Cooper Ct.
Los Gotos, CA 95030
408/395-7000
LIST PRICE: $995
Reader service no. 855

PC-OCR
Essex Softwore Publishing
P.O. Box 391
Cedor Grove, NJ 07009
201/783-6940
LIST PRICE: $195
Reader service no. 856

Perceive 1.1
Ocron
3350 Scott Blvd., Bldg. 36
Sonto Cloro, CA 95054
408/980-8900
LIST PRICE: $295
Reader service no. 857

Read-It for Windows 2.1
Olduvoi Corp.
7520 Red Rd., Ste. A
South Miomi, FL 33143
800/822-0772
LIST PRICE: $495
Reader service no. 858

ReadStar 6
Inovotic
1901 N. Fort Meyer Dr. #1015
Arlington, VA 22209
703/522-3053
LIST PRICE: $850
Reader service no. 859

ReadRight 2.01, ReadRight for Windows
OCR Systems
1800 Byberry Rd. #1405
Huntingdon Volley, PA 19006
800/233-4627
LIST PRICE: $495
Reader service no. 860

Recognize 2.0
New Dest
1015 E. Brokow Rd.
Son Jose, CA 95131
408/436-2700
LIST PRICE: $695
Reader service no. 861

TypeReader
ExpoVision
3590 N. First St.
Son Jose, CA 95134
800/732-3897
Reader service no. 862

WordScan Plus
Colero Recognition Systems
475 Potrero Ave.
Sunnyvole, CA 94086
408/720-0999
LIST PRICE: $995
Reader service no. 863

PKZIP®

PKZIP compresses your files to free up disk space and reduce modem transfer time. You can compress single files or entire directory structures into one archive file for easy storage or transfer. Compression typically results in saving 50% of the space taken up by the original file, effectively doubling the amount of information that will fit on a disk. Many database and spreadsheet files compress by as much as 90%.

Software developers can significantly reduce their product duplication costs by decreasing the number of disks required to distribute their application. Call for Distribution License information.

PKWARE® INC.
The Data Compression Experts

9025 N. Deerwood Drive Brown Deer, WI 53223
(414) 354-8699 Fax (414) 354-8559

PKLITE increases your valuable disk space by compressing executable (.EXE and .COM) files by an average of 45%. The operation of PKLITE is transparent to you and to other programs such as menu systems and batch files, all you will notice is alot more available disk space!

PKLITE can actually reduce the start up time of many programs due to reduced drive access time. PKLITE can be used on hard and floppy disks!

Software Developers, save disk space and media costs with smaller executables. You can distribute your software in a compressed form with PKLITE Professional. PKLITE Professional also gives you the ability to compress files so that they cannot be expanded, hindering reverse engineering of your programs.

PKZIP $47.00
PKLITE $46.00 PKLITE Professional $146.00
Please add $3.50 shipping and handling per package in the US & Canada, $5.00 overseas. Wisconsin residents please add 5% state sales tax & applicable county sales tax.

VISA MasterCard **No COD Orders**

PCW-4/92

Circle 212 on reader service card

Come On In.

Serving PCs

And Your Of Free

What comes to mind when you picture the classic 50's diner? Good food and plenty of it. Great service. And the price on the check is remarkably affordable.

When you buy a personal computer from Gateway 2000, the experience has its similarities. You get a solid quality, high-performance computer that comes fully loaded with all the

With The Works!

This ad was photographed at Archie's Diner in Sioux City, Iowa. Archie is behind the counter. Other characters are Gateway 2000 employees from departments throughout the company.

features you want. The service is unsurpassed anywhere. And the price you pay is also remarkably affordable.

Go ahead and browse through the Gateway Cafe menu. We serve a wide selection of the freshest items in the PC industry. You're sure to find something that will appeal to your taste and budget.

GATEWAY2000

"You've got a friend in the business."

Side Orders

Introducing The Gateway TelePath™

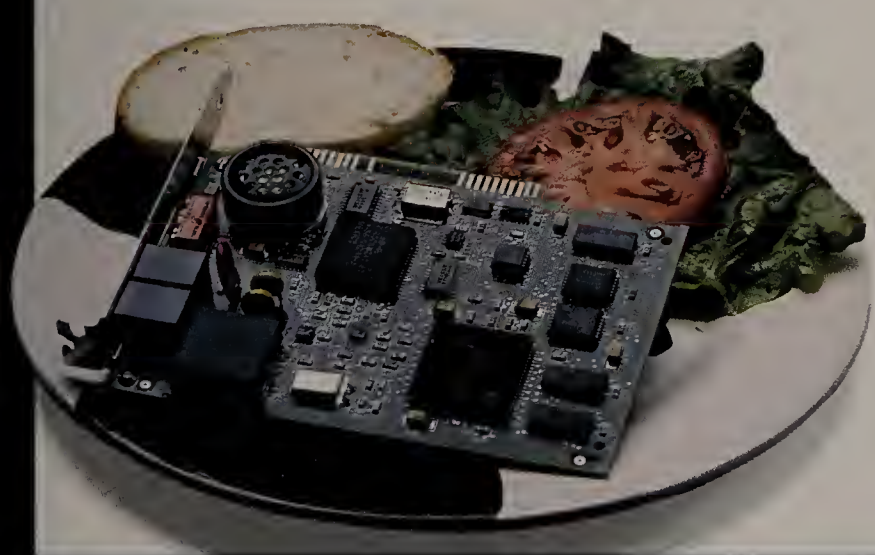
For $195, you get the Gateway TelePath – a new custom-designed V.32bis modem with 9,600 bps fax capability plus WinFax Pro,™ Crosstalk® for Windows™ and a free 30-day subscription to CompuServe® Basic Services. Anywhere else you'd pay more for the software alone!

Speed. The Gateway TelePath modem operates up to 14,400 bps. The Gateway TelePath send/receive fax runs at 9,600 bps.

Compatibility. The 14,400 bps modem is compatible with the standard AT command set and can be used with almost any compatible software. With the Gateway TelePath fax, you can send to or receive from any Group 3 or earlier fax machine using Class 1 or Class 2 commands.

- Fax mode: V.17, V.29, and V.27ter
- Data mode: (try to find one we don't support!) V.32bis, V.32, V.22bis, V.22, V.21, Bell 212A and 103, V.42 and MNP 2-4 error correction, V.42bis/MNP 5 data compression

Price. You'll find comparable fax/modem packages can cost in excess of $500 not including the software. At $195, the Gateway TelePath price is very easy to swallow.



Side Orders

New Video Options For Your PC

The 15-Inch Crystal Scan 1572FS

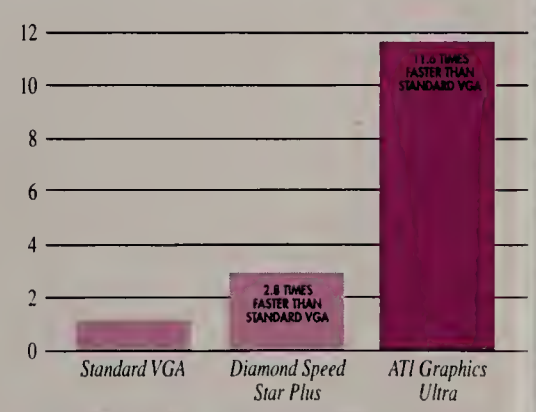
The new 15-inch Crystal Scan 1572FS has a flat, square, non-glare screen to reduce distortion around the corners and provide an edge-to-edge display area. We've also moved the fine tuning controls to the front of the monitor for easy access. The Crystal Scan 1572FS is an option with 386DX and 486 systems for an additional $195. Availability is limited.

The new 15-inch Crystal Scan is bigger and better than the 1024 series.

The ATI™ Graphics Accelerator

You're really cookin' when you run a Gateway 2000 system with ATI's graphics accelerator, the Graphics Ultra. ATI achieves a quantum leap in performance by using a highly optimized graphics coprocessor on the Graphics Ultra card. The 1024 x 768 mode is fully compatible with IBM® 8514/A, VGA, Super VGA and previous IBM graphics standards, which makes it easy to install applications using the standard video drivers.

The ATI Graphics Ultra video card is standard with the 486DX/33 system, optional with other DX systems. The street price of this card is over $500, but with the purchase of a Gateway 2000 system, you can upgrade to it for $150!



Figures computed on a 486DX/33 and provided by ATI Technologies Inc.

Peripherals are sold only with the purchase of a system. If you already own a Ga

Gateway Cafe

Desserts

Desserts

New On The Menu: Choose One Software Option Free With Your PC!

With the purchase of any Gateway 2000 computer system, you now receive your choice of free application software. Pick one from the seven application options in our software buffet. We'll install one software option on your hard drive, optimally configured for your system and Windows, and provide you with the master diskettes and manuals – absolutely free.

You can also buy additional software at extremely competitive prices, or choose from other popular applications not listed here. Ask your sales person for the details.

Option #1

Microsoft® Excel for Windows™ 3.0

- A powerful graphical spreadsheet program
- Includes online help for Lotus® 1-2-3® users
- *PC Magazine's* Editor's Choice

Retail value: $495. Discount value: $300+. Can be yours free with a Gateway 2000 PC!

Option #2

Microsoft Word for Windows™ 2.0

- Best selling word processor for Windows
- New version 2.0 adds spectacular refinements
- Includes online help for WordPerfect® users

Retail value: $495. Discount value: $300+. Can be yours free with a Gateway 2000 PC!

Option #3

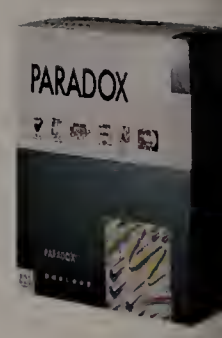
Microsoft PowerPoint for Windows™ 2.0

- Easy-to-use desktop presentations program
- Creates high-quality overheads and 35mm slides

Retail value: $495. Discount value: $300+. Can be yours free with a Gateway 2000 PC!

Option #4

The Paradox® 3.5



- Award-winning database management program
- From Borland®, the leader in database and programming software

Retail value: $695. Discount value: $500+. Can be yours free with a Gateway 2000 PC!

Option #5

The Entrepreneur Pack

Includes Microsoft's Works,™ Publisher™ and Money,™ the latest versions, and an Entertainment Pack, all for Windows, plus TurboTax for Windows® from ChipSoft

- Works integrates a word processor, spreadsheet, database and more into one easy-to-use program
- Publisher has page layout tools to create publications
- Money helps you control your finances by writing checks, setting budgets, tracking expenses
- Entertainment Pack, eight games including Tetris®
- TurboTax is an easy-to-use tax preparation program with online help for understanding IRS rules

Retail value: $607. Discount value: $400+. Can be yours free with a Gateway 2000 PC!

way 2000 computer, you can buy peripherals separately. Availability is limited.

Introducing The Gateway TelePath™

For $195, you get the Gateway TelePath – a new custom-designed V.32bis modem with 9,600 bps fax capability plus WinFax Pro,™ Crosstalk® for Windows™ and a free 30-day subscription to CompuServe® Basic Services. Anywhere else you'd pay more for the software alone!

Speed. The Gateway TelePath modem operates up to 14,400 bps. The Gateway TelePath send/receive fax runs at 9,600 bps.

Compatibility. The 14,400 bps modem is compatible with the standard AT command set and can be used with almost any compatible software. With the Gateway TelePath fax, you can send to or receive from any Group 3 or earlier fax machine using Class 1 or Class 2 commands.

- Fax mode: V.17, V.29, and V.27ter
- Data mode: (try to find one we don't support!) V.32bis, V.32, V.22bis, V.22, V.21, Bell 212A and 103, V.42 and MNP 2-4 error correction. V.42bis/MNP 5 data compression

Price. You'll find comparable fax/modem packages can cost in excess of $500 not including the software. At $195, the Gateway TelePath price is very easy to swallow.

New Video Options For Your PC

The 15-Inch Crystal Scan 1572FS

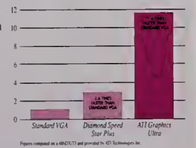
The new 15-inch Crystal Scan 1572FS has a flat, square, non-glare screen to reduce distortion around the corners and provide an edge-to-edge display area. We've also moved the fine tuning controls to the front of the monitor for easy access. The Crystal Scan 1572FS is an option with 386DX and 486 systems for an additional $195. Availability is limited.

The new 15-inch Crystal Scan is bigger and better than the 1024 series.

The ATI™ Graphics Accelerator

You're really cookin' when you run a Gateway 2000 system with ATI's graphics accelerator, the Graphics Ultra. ATI achieves a quantum leap in performance by using a highly optimized graphics coprocessor on the Graphics Ultra card. The 1024 x 768 mode is fully compatible with IBM® 8514/A, VGA, Super VGA and previous IBM graphics standards, which makes it easy to install applications using the standard video drivers.

The ATI Graphics Ultra video card is standard with the 486DX/33 system, optional with other DX systems. The street price of this card is over $500, but with the purchase of a Gateway 2000 system, you can upgrade to it for $150!



Figures computed on a 486DX/33 and provided by ATI Technologies Inc.

New On The Menu: Choose One Software Option Free With Your PC!

With the purchase of any Gateway 2000 computer system, you now receive your choice of free application software. Pick one from the seven application options in our software buffet. We'll install one software option on your hard drive, optimally configured for your system and Windows, and provide you with the master diskettes and manuals – absolutely free.

You can also buy additional software at extremely competitive prices, or choose from other popular applications not listed here. Ask your sales person for the details.

Option #1

Microsoft® Excel for Windows™ 3.0

- A powerful graphical spreadsheet program
- Includes online help for Lotus® 1-2-3® users
- *PC Magazine's* Editor's Choice

Retail value: $495. Discount value: $300+. Can be yours free with a Gateway 2000 PC!

Option #2

Microsoft Word for Windows™ 2.0

- Best selling word processor for Windows
- New version 2.0 adds spectacular refinements
- Includes online help for WordPerfect® users

Retail value: $495. Discount value: $300+. Can be yours free with a Gateway 2000 PC!

Option #3

Microsoft PowerPoint for Windows™ 2.0

- Easy-to-use desktop presentations program
- Creates high-quality overheads and 35mm slides

Retail value: $495. Discount value: $300+. Can be yours free with a Gateway 2000 PC!

Option #4

The Paradox® 3.5

- Award-winning database management program
- From Borland, the leader in database and programming software

Retail value: $695. Discount value: $500+. Can be yours free with a Gateway 2000 PC!

Option #5

The Entrepreneur Pack

includes Microsoft's Works,™ Publisher™ and Money,™ the latest versions, and an Entertainment Pack, all for Windows, plus TurboTax for Windows® from ChipSoft

- Works integrates a word processor, spreadsheet, database more into one easy-to-use program
- Publisher has page layout tools to create publications
- Money helps you control your finances by writing checks setting budgets, tracking expenses
- Entertainment Pack, eight games including Tetris®
- TurboTax is an easy-to-use tax preparation program with online help for understanding IRS rules

Retail value: $607. Discount value: $400+. Can be yours free with a Gateway 2000 PC!

Option #6

The Windows Programmer Pack

- includes Microsoft's QuickC for Windows,™ Visual Basic for Windows,™ Windows Control Development Kit,™ MS Windows Help Compiler™ and MS Windows Programmer's Reference™
- everything you need to create programs for Windows
- can't buy all of these tools in one package elsewhere, but this option can be yours free with a Gateway 2000 PC!

Option #7

Microsoft Project for Windows™ 3.0

- flexible and easy project management program
- includes interactive online tutorial
- *PC Magazine* calls it the best program in its category

Retail value: $695. Discount value: $425+. Can be yours free with a Gateway 2000 PC!

The free software packages offered here don't suit your needs, we have others that are very competitively priced. For example, if you'd rather get Microsoft Office,™ which includes Word for Windows, Excel and PowerPoint, you can upgrade to it. Office retails for $750, with a discount value of $499. It can be yours for only $175 with a Gateway 2000 PC. Ask your sales representative for details.

This offer includes the identical applications contained in retail packages but will not include the retail box. You get a complete set of diskettes and manuals, shrink-wrapped and packaged in a Gateway 2000 box.

Feast Your Eyes On These Entrees – Including A New 486DX2 Special!

Gateway 2000 computer systems – the meat and potatoes of our menu – come with all the trimmings at no extra charge.

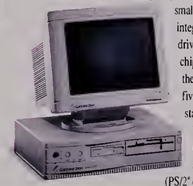
And if you're hungry for an ultra high-performance system at a great price, take a look at our new 50MHz 486DX2 computers. Both ISA and EISA models are based on the Intel486 DX2 dual speed processor. With a system clock frequency of 25MHz, the internal core of this CPU executes at 50MHz for a 35% increase in performance compared to a 33MHz 486DX system.

NEW

50MHz 486DX2 $3195
50MHz 486DX2 EISA $4095

386SX Systems

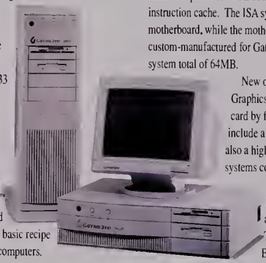
Gateway 2000's 386SX systems come in a compact, mini desktop model. To give you plenty of room for expansion in a small footprint system, we integrated the diskette drive controller, the video chip set and the I/O card on the motherboard, leaving five 16-bit slots open in the standard configuration. The mini desktop models have a standard mouse port (PS/2® compatible), leaving two serial ports open. RAM on these systems is expandable to 16MB on the motherboard. The Western Digital® IDE hard drives feature a 32K read-look-ahead cache buffer. All mini desktop models have Quadtel® BIOS and 200 watt power supplies.



The 124-key AnyKey keyboard comes standard with all Gateway 2000 systems.

386DX Systems

The 386DX systems have a true 32-bit memory bus and more expansion capability. We start with a genuine Intel® 80386 microprocessor on a Micronics® motherboard. We add a generous portion of RAM – 4MB expandable to a system total of 64MB. Put in 64K of cache RAM on the 386DX/33 for a nice performance boost. Add IDE hard drives from Western Digital. Then give them Diamond Speedstar Plus™ 16-bit VGA graphics cards with 1MB RAM, non-interlaced 14-inch Crystal Scan 1024 x 768 color monitors, Phoenix® BIOS, a Weitek socket on the 33 and 200 watt power supplies. That's the basic recipe for these tried-and-true, workhorse computers.



Both systems have a 32-bit slot open in the standard configuration for RAM expansion. The motherboard has a total of one 32-bit and seven 16-bit slots, with one 32-bit and five 16-bit expansion slots available in the advertised configuration. Gateway's 386DX and 486 systems come in a desktop model that is roomy and easily accessible. A floor-standing tower model is an option for an additional $100.

486DX And DX2 Systems

Gateway 2000's 486 systems run on the real McCoy – an Intel486™ processor with built-in math coprocessor and 8K instruction cache. The ISA systems have a Micronics® motherboard, while the motherboard for the EISA systems is custom-manufactured for Gateway 2000. RAM is expandable to a system total of 64MB.

New on the ISA models is the ATI® Graphics Ultra, which is the fastest video card by far in its class. The EISA models include a Diamond Speedstar Plus, which is also a high-performance video card. Both systems come with 1MB video RAM.

The ISA systems have eight 16-bit slots on the motherboard, six available in the standard configuration. The EISA machines have eight 32-bit EISA slots on the system board. You have five 32-bit EISA slots open in our standard configuration.

The ISA systems have Phoenix BIOS, while the EISA computers use Award® BIOS. All systems come with Weitek sockets and 200 watt power supplies.

Included With Every System:

- One-year limited warranty • 30-day money-back guarantee
- Lifetime toll-free technical support • Free on-site service to most locations • Free bulletin board technical support
- C.O.D. terms and major credit cards honored • Net 30-day credit terms and leasing options available to qualified commercial customers

Peripherals are sold only with the purchase of a system. If you already own a Gateway 2000 computer, you can buy peripherals separately. Availability is limited.

Gateway Cafe

16MHz 386SX

- Intel® 80386SX Processor
- 2MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 40MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey™ Keyboard
- Microsoft® Mouse
- MS® DOS® 5.0
- MS Windows™ 3.0
- Choice of Application Software

$1445

20MHz 386SX

- Intel 80386SX Processor
- 32K Cache RAM
- 4MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 80MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0
- Choice of Application Software

$1745

25MHz 386DX

- Intel 80386 Processor
- 4MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 80MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0
- Choice of Application Software

$1895

33MHz 386DX

- Intel 80386 Processor
- 64K Cache RAM
- 4MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 200MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0
- Choice of Application Software

$2395

33MHz 486DX

- Intel 80486 Processor
- 64K Cache RAM
- 8MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 200MB 15ms IDE Drive with 64K Multi-Segmented Cache
- ATI™ Ultra 8514/A Video with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0
- Choice of Application Software

$2945

50MHz 486DX2

- Intel 80486DX2 Processor
- 64K Cache RAM
- 8MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 200MB 15ms IDE* Drive with 64K Multi-Segmented Cache
- ATI Ultra 8514/A Video with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0
- Choice of Application Software

$3195

**Enhanced IDE with RIDE (Rapid Integrated Drive Electronics) technology.*

33MHz 486DX EISA

- Intel 80486 Processor
- 128K Cache RAM
- 8MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 340MB 15ms SCSI Drive with 128K Multi-Segmented Cache
- 32-Bit EISA SCSI Controller
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0
- Choice of Application Software

$3895

50MHz 486DX2 EISA

- Intel 80486DX2 Processor
- 128K Cache RAM
- 8MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 340MB 15ms SCSI Drive with 128K Multi-Segmented Cache
- 32-Bit EISA SCSI Controller
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0
- Choice of Application Software

$4095

BEST BUYS

- Get our 33MHz 386DX system, same configuration as listed, with a 120MB IDE hard drive instead of the 200MB drive.

$2145

- Same features as our 33MHz 486DX system except this machine has 4MB RAM instead of 8, and a 120MB IDE hard drive instead of the 200MB drive in our standard configuration.

$2495

Sales Hours: 7am-10pm Weekdays, 9am-4pm Saturdays (CST)
Service Hours: 6am-Midnight Weekdays, 9am-2pm Saturdays (CST)

All prices are subject to change. Prices do not include shipping.

intel inside

GATEWAY2000

"You've got a friend in the business."

GLOBAL REALEAF

800-523-2000

610 Gateway Drive • P.O. Box 2000 • N. Sioux City, SD 57049-2000 • 605-232-2000 • Fax 605-232-2023

©1992 Gateway 2000, Inc. AnyKey and TelePath are trademarks of Gateway 2000, Inc. Intel and Intel Inside are trademarks of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies.

58% OFF

FREE DISK!

PC WORLD

Subscribe to PC WORLD and save 58%. Plus, receive 50 Free Utilities.

You'll receive FREE our PowerBase*.* Disk complete with 50 Tips and Utilities to use with your software packages. Tips and tricks for:

- WordPerfect
- WordStar
- Turbo Pascal
- Turbo C
- Lotus 1-2-3
- Paradox
- Basic
- And much, much more!

☐ Yes, I want to stay ahead of the competition with PC WORLD's product reviews, hot news and How To tips and techniques. I'll pay only $19.97 for 12 monthly issues-almost 58% off the annual newsstand price-plus I'll receive FREE PC WORLD's PowerBase*•* Disk.

Mail this card or call 800-825-7595

NAME _____

COMPANY _____

ADDRESS _____

CITY/STATE/ZIP _____

Basic annual subscription price is $29.90. Savings based on annual newsstand price of $47.40. Please allow 6 to 8 weeks for delivery of your first issue. Offer good only in the U.S. PowerBase *•* diskette is offered solely by PC WORLD Magazine. It should not be confused with 'power-base' which is relational database software offered by Compuware Corporation.

Recycled Paper

4HU88

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

THE ASSOCIATION FOR COMPUTING MACHINERY PROUDLY PRESENTS

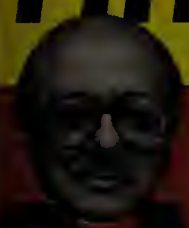
THE COMPUTER MUSEUM'S 1992 COMPUTER BOWL

FRIDAY MAY 1, 1992

THE HASSLE IN THE CASTLE

ANOTHER TECHNICAL KNOCKOUT

EAST vs WEST



CHARLIE "JOHANN SEBASTIAN"
BACHMAN
Software Publishing Services, Inc.

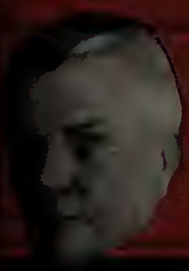
vs

JOHN F. "FUTURE"
SHOCH
Captain, Asset Management Company

BILL "THE BLADE"
MACHRONE
Ziff-Davis Publishing Company

VS

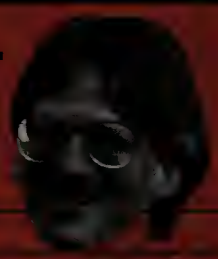
JEFF "THE KILLER"
KALB
MasPar Computer Corporation



DR. DAVID L. **"HALF" NELSON**
Fleet Machines Inc.

VS

RUTHANN **"THE MIGHTY" QUINDLEN**
Alex. Brown & Sons

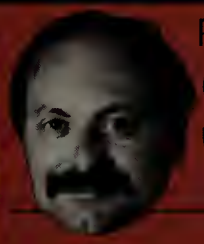


BARRY "M.C." **RAPPAPORT**
Discovery Channel, Inc.

VS

VERN "THE ACE"
RABURN
Mass Corporation

THE EXAMINER
BILL GATES
Microsoft Corporation



PAUL "BEARER"
SEVERINO
Wellfleet Communications, Inc.

VS

DR. JOHN E. "KNOCK KNOCK"
WARNOCK
Adobe Systems, Incorporated

LIVE SITE THE PARK PLAZA CASTLE
BOSTON, MASSACHUSETTS

The Computer Bowl

CLOSED CIRCUIT SITE XEROX PALO ALTO RESEARCH CENTER, CALIFORNIA

[illegible] fans have been waiting for [illegible] the action-packed Techni[illegible] the West has been clamoring for [illegible] challenges from the East. On [illegible] chance to lace 'em up. [illegible] or at the closed [illegible] all the blow by blow excitement [illegible] *In The Castle* – The Computer [illegible] Computer Bowl. It's sure [illegible] *Knockout*.

[illegible] Association for Computing Machinery

[illegible] Computer, Inc.
[illegible] Equipment Corporation

Judges
Pamela McCorduck
Author

Heidi Roizen
T/Maker Company

Founders
Pat Collins Nelson &
Dr. David L. Nelson

Official Sponsors
Bank of Boston
The Bank

BASF Information Systems
The Diskette

Intel Corporation
The Microprocessor

MasPar Computer Corporation
The Massively Parallel ComputerCompany

Merrill, Pickard, Anderson & Eyre
The Venture Capital Firm

Price Waterhouse
The Accounting Firm

Radius Inc.
The Systems Enhancement Company

Robertson, Stephens & Co.
The Investment Bank

Stratus Computer, Inc.
The Transaction Processor

Visix Software Inc.
The High Performance Workstation Software Co.

Wellfleet Communications, Inc.
The Internetworking Company

Promotion
PARTNERS & Simons

The Computer Bowl is broadcast on the PBS series, Computer Chronicles, hosted by Stewart Cheifet. The Computer Bowl is a project to benefit the educational programs of The Computer Museum, 300 Congress St., Boston, MA 02210.

For tickets and sponsorship information 617-426-2800 ext. 346.

Engraving
HK Graphics

EXCEL

BY RICHARD SCOVILLE

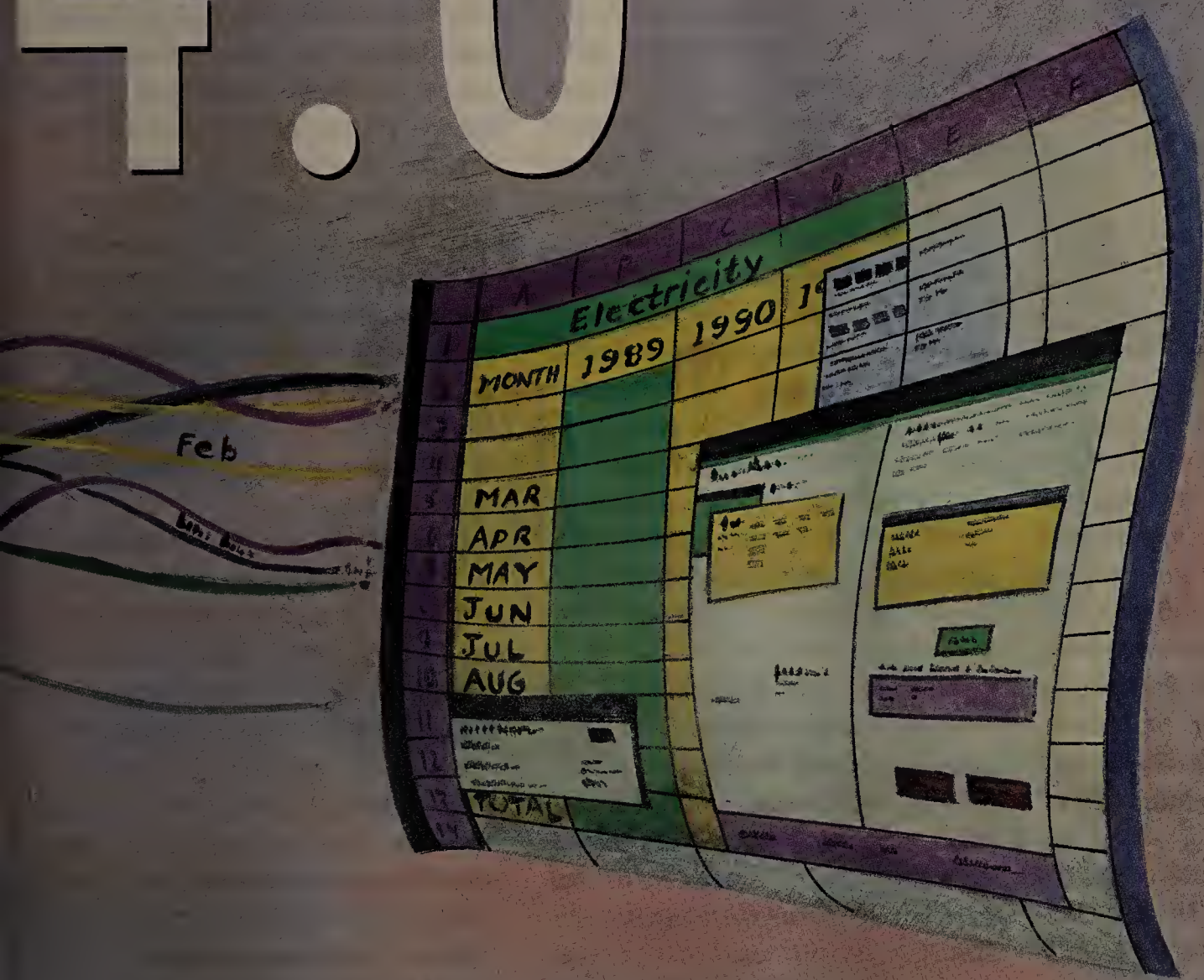
GREG RAGLAND

Excel 4.0 so soon? What could Microsoft possibly add to *Excel 3.0*, just 15 months later, to justify a new release?

The answer: plenty. Last year I called *Excel 3.0* "the best application running on PCs today." Well, the more things change, the more they stay the same. *Excel 4.0*, due out this month, is a stunning combination of subtle refinement and revolutionary innovation that confirms *Excel* as the all-but-uncatchable leader in spreadsheet technology. So what do you get for the trouble and expense of yet another upgrade to this premium *Windows* package ($495, $129 for competitive upgrade, $99 for version upgrade until July 31, $129 thereafter)?

4.0

We thought Microsoft could never top Excel 3.0. We were wrong.



How about unprecedented ease of use, much-needed organizational tools, *1-2-3* macro compatibility, and powerful new analytical features.

The new *Excel* takes a "show me once" approach to basic spreadsheet tasks, which means fewer trips to the menus as you build worksheets. For instance, when you need to move things around the worksheet, forget about Cut and Paste; just select a range, grab it with the mouse pointer, and drag it to a new location. Hold down the Control key as you drag and drop, and it copies the selection; hold the Shift key, and it inserts the selection instead of writing over existing cells.

But be mindful of the dangers inherent in moving spreadsheet data values. It's a simple fact that moving cells changes the underlying structure of the worksheet, and when you move the cells that a formula refers to, you change the structure of the formula. Drag and drop makes moving cells so easy and "intuitive" that a naive or careless user could wreak havoc on a spreadsheet's formulas and produce dangerous errors without even noticing.

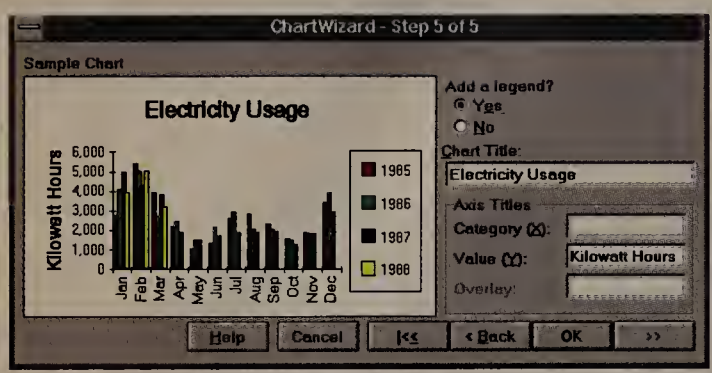
When you need a menu command or dialog box, they're closer at hand than ever before. Select an object such as a cell or a graph data series, click the right mouse button, and you get a set of menu selections specific to that object. For a cell, the menus include Insert, Delete, Clear, Format Number, and Format Alignment. Click on a graph axis, and the menu displays options for Axes, Ticks, Font, Text, and so on. As with *3.0*, if you double-click on an object, such as a graph axis, you get a dialog box for formatting it.

Tired of entering and copying a repetitive series of labels or values? *Excel*'s Autofill feature looks at your first entry and completes the thought for you. Type 'January' into a cell, for example, grab the small, square handle at the lower-right corner of *Excel 4.0*'s cell pointer, and drag it across the row or down the column. When you let go, *Excel* fills the selected cells with 'February,' 'March,' and so on. And it

RAGLAND

also works with days of the week, dates, financial quarters, and any linear numeric series. If you auto-fill a formula, you get standard copies without going to any menus.

Excel 4.0's new tool bars—shortcut buttons that execute frequently used commands—will also help you steer clear of menus. Sure, *Excel 3.0* has a tool bar, as do a host of other new *Windows* programs, but *4.0*'s approach is the most flexible and intuitive thus far. It provides a standard set of task-oriented tool bars for formatting, drawing, macros, charts, and so on. You can customize the standard tool bars and easily create your own by simply dragging new icons into it.



Wizards guide you step-by-step through complex procedures. The chart Wizard prompts you to select chart data, choose a chart type, specify axis details, and enter titles.

As elsewhere in this release, it's the attention to small details and the subtle visual cues that really make the tool bar feature shine. For instance, if you drag a tool bar to the middle of the screen, it floats on the worksheet surface; drag it to the edge of the window, and it merges with the frame. You can group the icons inside the tool bar into functional subgroups, which makes them surprisingly easier to work with. If you resize a floating tool bar, the icons arrange themselves by subgroup.

Many users never explore the more sophisticated features of their spreadsheet program because the procedures seem too confusing. To make such tasks more accessible, *Excel 4.0* introduces the Wizard, a scripted set of reminders that walks you through the procedure. To create a graph, start by clicking the graph Wizard icon. A dialog box appears, prompting you to select the range containing the graph data. The next two boxes prompt you to select a graph type, and the last two let you add text and configure the axes. In each dialog box, explanatory text and a draft view of the graph keep you abreast of your progress.

Other nifty gadgets abound. To gain perspective or zoom in on details, you can scale your view of the worksheet from 10 percent to 400 percent, a trick that's especially useful when projecting a spreadsheet image for overhead viewing. There's a reasonably quick spelling checker. And an outrageously cybernetic Autoformat feature lets you select from 14 standard spreadsheet formatting schemes, ranging from conservative Classic 1 to trendy Colorful 3.

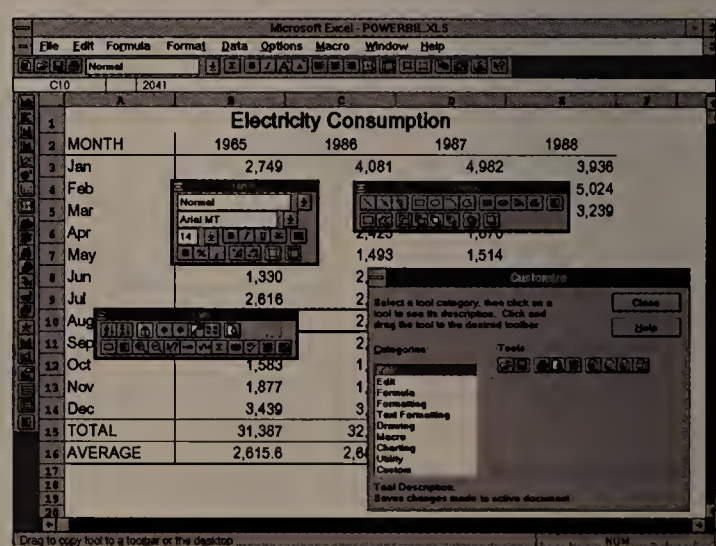
LET'S GET ORGANIZED

Controlling, standardizing, and managing large, complex worksheets is a major concern for organizations that rely on them for mission-critical information processing. Locating specific data or results in a spreadsheet can be frustrating if you don't know where to look. User-built spreadsheets often suffer from dangerous disorganization, in part because vendors have provided few tools, other than range names, for keeping things in order. *1-2-3 3.*x's 3-D worksheets are a notable exception, but even they can be tough to navigate. Happily, *Excel 4.0* tackles the problem head-on, with three new organizational features: workbooks, views, and named reports.

Excel 4.0's workbook feature supplants the old File Workspace command, which allowed you only to save a set of related spreadsheet files under one group name. By contrast, a workbook lets you organize your applications efficiently by binding a set of sheets together into a single DOS file. Clicking an icon lets you "turn pages," moving from one sheet to the next; another icon takes you to a table of contents, where you can select any sheet you wish to see. You can give each bound sheet a long name (up to 31 characters), and by assigning each its own window, you can view the sheets side by side. There's even a group-editing command that lets you make the same formatting changes to several sheets at once. *Excel* workbooks do not, however, duplicate all the capabilities of *1-2-3 3.0;* for instance, you can't define or manipulate 3-D ranges. But for most *1-2-3* users, 3-D is primarily an organizational device, and in this respect *Excel* goes *1-2-3* one better.

Excel keeps you organized by using a *view*, which is a kind of named snapshot of the worksheet: It stores the current window—its size, position, and current print settings—in a list, then lets you restore that exact appearance later by selecting the view. Similarly, a *named report* stores a series of views, each with its own print settings, then lets you print a multipage report without resorting to a print macro.

Excel has always played Avis to *1-2-3*'s Hertz, so *1-2-3* compatibility is a top priority for *Excel*'s programming



Excel's floating tool bars are organized by typical worksheet tasks: charting, editing, and so on. You can customize a tool bar or create your own, as shown here by dragging icons from the Customize Library.

team. While *3.0* wooed *1-2-3* users with a help system expressly designed to ease their transition to *Excel*, macro compatibility remained a stumbling block for organizations with a heavy investment in Lotus applications.

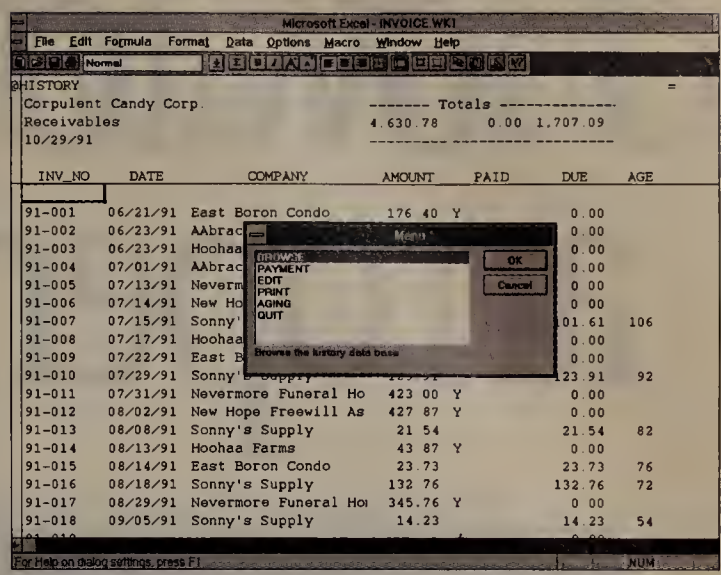
That final obstacle is now beginning to crumble. *Excel 4.0*'s *1-2-3* macro interpreter runs release 2.01 macros just fine, thank you, and by the time you read this, Microsoft hopes to have conquered the *2.2* macros as well. (The beta software I ran couldn't handle some *2.2* commands, much less new ones that appeared in *2.3* and *3*.x.) But for the many macros it does handle, this interpreter is great. You just open the WK1 file, and if the macro is named \P, you press <Ctrl>-P to run it.

And does it ever! My *1-2-3* macros run faster in *Excel 4.0* than they do in *1-2-3 for Windows*. In *Excel 4.0* a macro-generated menu appears as a mousable dialog box, unlike *1-2-3 for Windows*' rickety, unmousable classic menu. As you gain experience with your new spreadsheet, you can even embed *Excel* macro-function calls within your *1-2-3* macro code.

Finally, *Excel 4.0* reads and responds to *Allways* and Wysiwyg formatting and opens a 3-D WK3 file from *1-2-3* release 3.*x* as a multisheet workbook. While it preserves external formula references in these files, it sheds data structures such as 3-D range names or 3-D data tables along the way. Apparently, Microsoft doesn't expect heavy competition from *Quattro Pro: Excel 4.0* can't read its WQ1 files, and while it's easy to open them via WK1 format, you'll lose any fancy formatting.

CHARTS, GRAPHS, AND REPORTS

The improvements here range from the sublime (print to fit, an indispensable option that shrinks a large print range onto a single page, now works on non-PostScript printers) to the ridiculous (à la *Quattro Pro*, there's a slide-show generator complete with silly sound effects to accompany image transitions). The chart gallery offers radar charts, 3-D surface charts, and 3-D horizontal bar charts, and you can rotate a 3-D graph by grabbing it with the mouse. The overall usability of the charting program has been improved in other ways, too: The chart Wizard, a chart tool bar, and the right mouse button all make working with charts a lot easier.



Excel's new 1-2-3 macro interpreter executes standard release 2.01 macros without modifications.

In addition to the named reports described above, you can create multiline headers and footers, and the redesigned dialog box makes it a lot easier to embed the date, time, and other special codes in them. There's even an option in the Page Setup dialog box that lets you suppress cell colors when you print so you don't have to reformat the worksheet in order to print it on a black-and-white printer.

Excel's Scenario Manager elevates the art of what-if analysis to a new plane. It lets you prepare and name sets of alternative values for input cells, then switch easily from one set to another to see their effects on formulas. *Excel* maintains a list of named scenarios and lets you generate a summary table of their results. The Solver now has a Save Scenario function that lets you store a solution as a scenario.

The new Crosstabs add-in, complete with its own guiding Wizard, lets you generate a summary table of data base information to show, for example, subtotals or averages by department. It can also tally the records in each category to show, for instance, the number of employees in each age group.

Microsoft claims that 15 to 20 percent of *Excel*'s current users are scientists or engineers. To please these influential customers, and to wow their unpersuaded colleagues, *Excel 4.0* offers an Analysis Tools add-in that provides a host of advanced procedures, from analysis of variance and random sampling to Fourier analysis. To accompany them, *4.0* introduces 140 new functions, such as binomial, chi-square, and normal distribution statistics. Many users who used to have to transfer spreadsheet data into a statistical analysis program like *Statgraphics* can now do the whole job in *Excel*.

ROLL UP YOUR SLEEVES

In my many years of training users on spreadsheet software, I've shared their frustration at the time required to master the simple, repetitive tasks—moving, copying, and formatting—before moving on to advanced features. And as vendors loaded more and more features into the same old interfaces, users' frustration intensified. That's why *Excel*'s attention to fit-and-finish details and emphasis on direct manipulation are such welcome developments. For more sophisticated users, new organizational tools, such as workbooks, pursue a similar goal by making it easier to manage complex applications. So what are you waiting for? Get to work!

Richard Scoville is a contributing editor for PC World *and a software training consultant in Durham, North Carolina. He can be reached on PC World Online (see page 8 for more information).*

WHERE TO BUY

Microsoft Corp.
800/426-9400
Reader service no. 866

How to change a car
an open discussion.

Harvard Graphics and ScreenShow are registered trademarks and HyperShow is a trademark of Software Publishing Corporation. Windows is a trademark of Microsoft Corporation.

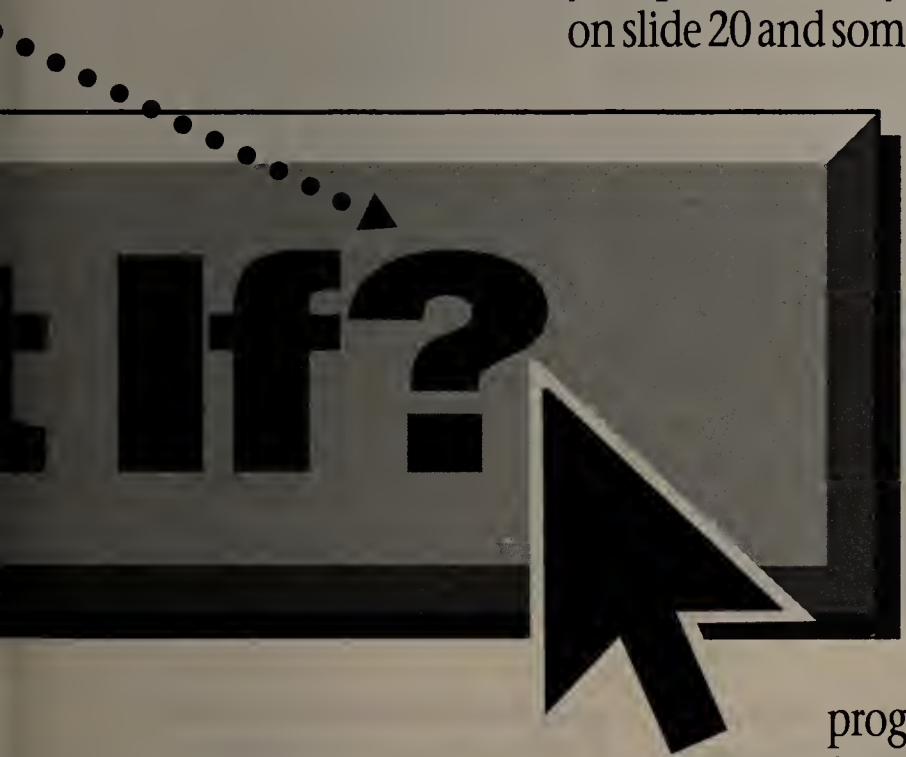
Set up simple HyperShow links between slides in your on-screen presentation.

And with the click of an on-screen button, you can jump to different slides to answer audience questions.

©1992 Software Publishing Corporation, 3165 Kifer Road, Santa Clara, CA 95051. All rights reserved

Make a change for the better. Call 1-800-336-8360, Operator 869, to get you

ned presentation into



Now you can change an audience that just sits there into one that sits up and takes notice.

All it takes is a PC, a monitor and the advanced ScreenShow® capabilities of Harvard Graphics® for Windows™ from Software Publishing Corporation.

And before you know it, you'll be making incredibly dynamic and interactive on-screen presentations.

Our HyperShow™ feature, for instance, lets you navigate anywhere in your presentation you and your audience want to go. Let's say you're on slide 20 and somebody asks a question that's better answered by other slides in your presentation. By simply clicking on-screen buttons, you can jump to those slides, answer the question and jump back again.

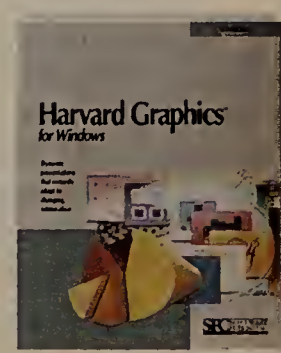
Moreover, a feature we call Launch Application lets you run other DOS and Windows programs from within your ScreenShow presentation. Everything from spreadsheets that let you play "what-if" scenarios with your audience. To sound and video that can help you make a point like you've never made one before.

And with our DDE links to other Windows programs, you can keep your data current even as your ScreenShow goes on.

Naturally, our ScreenShow capabilities include a full complement of fades, dissolves and other special effects to give your presentation a professional polish.

Harvard Graphics for Windows.

It changes everything for the better. Including the way your audience responds.



ee Harvard Graphics for Windows demo disk.

SPC SOFTWARE PUBLISHING CORPORATION

How Can A Direct Supplier Like Northgate® Give You Superior LAN Solutions And Support?

Like Machu Picchu, Some Phenomena May Never Be Explained.

You may think that Machu Picchu and a Northgate OmniLAN™ solution have little in common. The fact is, both are the result of insightful design and extraordinary engineering – the elements of a true phenomenon.

Whether you need a LAN with just four workstations or hundreds, OmniLAN systems give you the outstanding performance and reliability you need for today's business applications. Best of all, installation is as easy as connecting the color-coded cabling and turning the system on. All networking cards and software have been installed for you. Here's how to select the right OmniLAN system for you:

Pick a file server. Options include an Elegance™ SP 386/33, SP 486™/33 or 486/33 EISA. All have 8 or 16MB RAM, 300MB SCSI hard drive and controller, monochrome monitor and network interface card.

Choose from four topologies: ARCNET, ETHERNET Thin Net, ETHERNET 10BASE-T or Northgate Local Area Wireless Network.

Select your operating environment. Northgate has forged a strategic alliance with Novell which allows us to offer NetWare 386 3.11 and 286 2.2.

©Copyright Northgate Computer Systems, Inc., 1992 All rights reserved Northgate, Elegance, OmniLAN, OmniKey and the Northgate 'N' logo are U.S. trademarks or registered U.S trademarks of Northgate Computer Systems. 80386SX and 80486 are registered U.S. trademarks of Intel. All other products and brand names are U.S. trademarks and registered U.S trademarks of their respective companies Specifications subject to change without notice Northgate reserves the right to substitute components of

The ancient Inca ceremonial site of Machu Picchu, high up in the Peruvian Andes, has long mystified historians, scientists and engineers by the precision of its stonework. Massive granite blocks were systematically cut and set without the use of mortar – yet the joints between them are barely visible. Though they were an advanced civilization, the Incas had no iron tools or other materials to achieve this level of quality. How, then, was it accomplished? Through levitation? Psychic powers? Extra-terrestrial assistance? The answer continues to elude us.

intel inside™

Your network also includes four 386SX™/20 workstations each with a 52 MB hard drive, VGA card, network interface card, 14″ color monitor, and *OmniKey*® keyboard.

You get a limited one-year parts and labor warranty including on-site service from NCR.® Plus, 24-hour, 7-day-a-week toll-free technical support backed by Certified NetWare® engineers. Customized service and support plans also available.

Call for a free Decision-Maker's Kit, complete pricing and custom configuration information.

800-345-0188

Major corporations, volume purchasers and government agencies call National Business Accounts: 800-345-0031

Charge it to your VISA, MasterCard, Discover, American Express or Northgate Big 'N' card.

NORTHGATE COMPUTER SYSTEMS, INC.

7075 Flying Cloud Drive, Eden Prairie, MN 55344

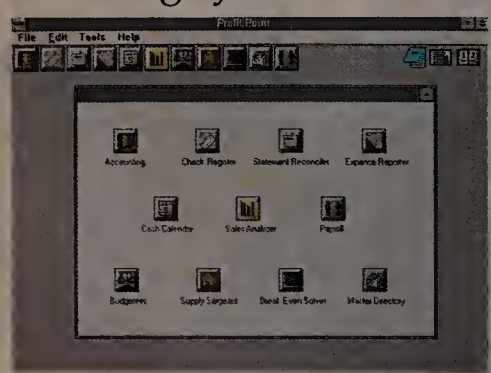
CODE N3804

equal or greater quality or performance. All items subject to availability. Offer good only in the U.S. and Canada. We support the ethical use of software. To report software copyright violations, call the Software Publishers Association Anti-Piracy Hotline at 1-800-388-PIRB.

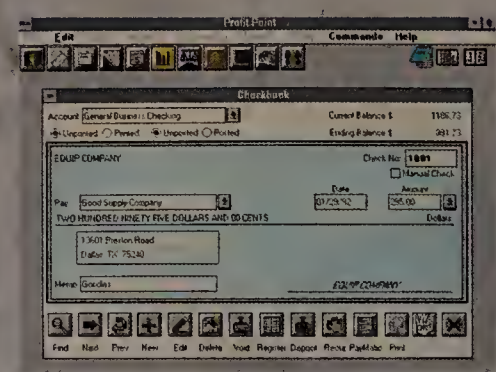
Easy Money.

Introducing Profit Point Accounting for Windows. Simply the *easiest* way to account for your finances.

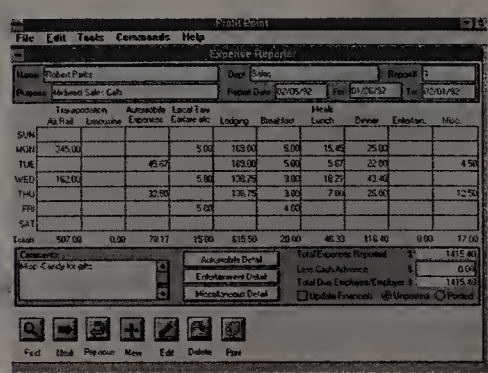
If you know how to write a check, then you know how to use PROFIT POINT. It's that simple. Just point. Click. And you're in control. Our friendly icon and forms-driven program will have you productive in no time. And if you are an accounting expert, you won't find a more comprehensive integrated accounting system.



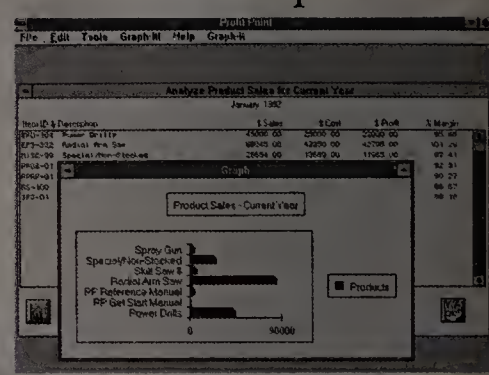
PROFIT POINT takes full advantage of the power of Windows, combining all the depth a CPA expects in a fully integrated accounting



system with ten management and financial tools designed for non-financial types. We've designed PROFIT POINT to make accounting fun and understandable, not laborious and confusing. Our checkbook *looks* like a checkbook. Fill in the blanks and PROFIT POINT does the rest.



We've built in tools to help you analyze and graph sales, create expense reports, remind you when bills are due, assist you in vendor/customer relations, help you write budgets, and even show your break even point.



But we don't stop there. Your purchase entitles you to responsive, knowledgeable support, an unmatched upgrade policy, a newsletter of tips and techniques, plus more. To top it off, PROFIT POINT comes with a money-back guarantee.

Complete Integrated Accounting
- General Ledger
- Accounts Payable
- Accounts Receivable
- Inventory
- Purchase Orders
- Payroll *(with registration)*
- Checkbook
- Plus 10 Money Management Tools
- Job Costing
- Customer/Vendor/Employee Database
- Unlimited Companies
- Unlimited Divisions/Departments
- Unlimited Bank Accounts
- Unlimited G/L Accounts
- Cash or Accrual Accounting
- Customizable Chart of Accounts

Easy Check Writing
- Quick Check Writing/Deposits
- Check Register
- Manual Checks
- Void Checks
- Recurring Checks
- Reconcile Bank Statements
- Automatic Checks for Payables

Easy-to-Use
- Graphical Interface of Windows
- Completely Forms and Icon-driven
- Tools Always Available
- Tutorial/Alphabetical Reference
- Detailed Context-Sensitive Help
- Customizable Menus
- Multiple Open Windows
- Automatic Debit/Credit Guide

Graphing
- Bar/Pie/Line/Area/Scatter in 3D
- Determine/Graph Break-Even Points
- Modify Fonts, Patterns, Colors

Financial and Management Reports
- Income Statements
- Balance Sheets
- Trial Balance
- Complete Audit Trail
- Cash Flow Reports
- Accounts Payable Reports
- Aged Open Payable Report
- Aged Receivable Report
- 1099 Reporting
- Summary Report of all Financial Info
- Plus over 70 more . . .

Complete Inventory Management
- Purchase Orders
- Monitor Inventory Transactions
- Generate Inventory Reports
- Call-up Stock List in Sales Window

Customers
- Complete Customer History
- Write Quotes/Convert to Invoices
- Customize Payment Terms
- Graphically Analyze Sales

Reminder System
- Outstanding Purchase Orders
- Expiring Discounts
- Unpaid Invoices
- Personal Appointments/Notes

Plus Much More
- Create, Monitor, and Graph Budgets
- Complete Personnel/Payroll System
- Automatic Expense Reports
- Full Printer Support
- Pop-up Calculator, Calender, Notepad
- Export to Lotus, Excel, DBase, ASCII
- Customer/Vendor Mailing Labels
- Protected Password Entry
- Customer Support Hotline
- Call for Even More . . .

MICROSOFT WINDOWS

1-800-925-5700

Available at Egghead Discount Software, COMPUSA, Computer City Superstores and other fine dealers nationwide.

Circle 117 on reader service card

GoodSoftware
CORPORATION
13601 Preston Road • Dallas Texas 75240

DOS *vs* DOS

DR DOS, the world's premier DOS clone, provides more features and frees up more conventional memory than DOS 5.0. But will it work with everything?

BY SCOTT SPANBAUER

DOS 3.3 was great for its time, but now that you're itching to move up, MS-DOS 5.0 looks like the obvious upgrade, right? Not so fast. Digital Research Incorporated's DR DOS 6.0—a DOS clone with superior memory management, a host of bundled utilities, and the same $99 price tag as Microsoft's DOS 5.0 upgrade—is here. And it's a strong contender for your upgrade dollar.

Plenty of users are finding DRI's alternative to MS-DOS attractive. According to International Data Corporation analyst Nancy McSharry, the upstart operating system is giving Microsoft a run for its U.S. market, claiming 6 percent of the OS pie as of December 1991.

"Considering what they're up against, DRI is doing incredibly well," says McSharry. DR DOS could become even more alluring to users once DRI's new owner, network powerhouse Novell, puts its stamp on the product. Novell has announced plans to modify future versions of DR DOS so that it will be more tightly integrated with NetWare, allowing for easier network management and simpler network installation.

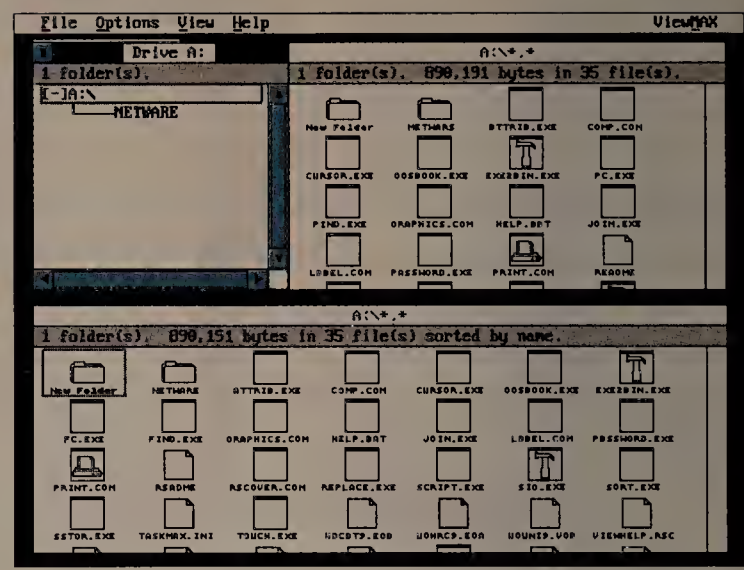
Is It Compatible?

Network integration, however, is still just a notion. A more important consideration is compatibility with existing software. Since MS-DOS

is the standard, software developers make sure their applications are fully compatible with it. As long as MS-DOS is compatible with earlier versions of itself, there's little to worry about. DR DOS, on the other hand, needs to be compatible with MS-DOS as well as with every other piece of software available—a nearly impossible task. Some of the bundled utilities—one of DR DOS's advantages over MS-DOS—have caused problems. When DR DOS is installed with the disk caching utility enabled, for example, it's possible to corrupt existing DOS files. Some users have reported that DR DOS's file compression utility may be incompatible with certain third-party utilities such as defraggers, and DRI concedes that some of the program's security features don't work on certain IBM PS/2s. More surprising, DR DOS has shown incompatibilities with parent company Novell's NetWare Lite LAN operating system, particularly when users run DR DOS's disk compression utility on a NetWare Lite server.

To correct these and other reported incompatibilities, DRI began in December of last year to ship an update plus a 50-page configuration and optimization guide to all registered DR DOS owners. Incompatibility problems could be compounded, however, by *Windows 3.1*, not yet released at press time. Digital Research promises to correct any future *Windows* incompatibilities, but doubts linger, and they won't be answered definitively until *3.1* arrives, probably sometime this month.

The 3.1 release will answer other questions too—such as how Microsoft intends to play the game. Microsoft's redesign of *Windows*—specifically the virtual device interface, which connects *Windows* to external memory management systems—will likely make it incompatible with DR DOS. And Microsoft has already stated its unwillingness to help DRI fix any *Windows 3.1*–DR DOS incompatibilities. You can't blame Microsoft for not wanting to share the operating system market, but by stonewalling DRI, Microsoft is playing hardball with its customers, forcing them to use MS-DOS. Such a decision could come back to haunt Microsoft; Novell could retaliate by building links into NetWare so that only DR DOS would be fully NetWare compatible.



DR DOS's shell looks surprisingly Mac-like, but its real inspiration is the GEM operating system.

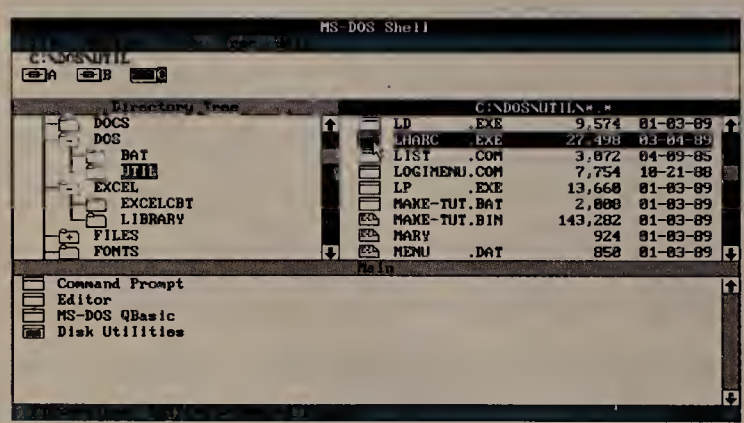
Bundles of Features

For those willing to risk incompatibilities, DR DOS holds many loyalty-inspiring features MS-DOS lacks. One is optional password protection for files, subdirectories, hard disk volumes, and the entire system—crucial for keeping unwanted network and late-night office snoops out of your data. Another is "interactive boot processing," which makes life easier for folks who need to change system configurations frequently (DR DOS asks whether to load selected drivers and programs at start-up—there's no need to store and rename multiple CONFIG.SYS and AUTOEXEC.BAT files). DR DOS's most obvious advantage is its new task switcher, which runs from the shell or the command line and can handle 20 programs at once.

Not content to outdazzle the competition at the nitty-gritty level, DRI also throws in some utilities you'd normally have to go out and pay good money for. DR DOS has incorporated a serial file transfer utility—something Microsoft planned to include in MS-DOS 5.0 but pulled shortly before release. If you've been planning to purchase a program like *Lap-Link* or *Brooklyn Bridge*, DR DOS will save you the cost.

More important to those of us living in a universe of ever-expanding files, DR DOS now comes with an on-the-fly file compression program that can double hard disk capacity, and a disk optimizer that defragments files, speeding hard disk reads and writes. Of course, task-specific commercial utilities may offer better features and performance than DRI's collection, but the company is hoping the low cost of admission will entice the idly curious.

DRI claims that DR DOS's disk caching utility (a version of our February 1990 Best Buy *Super PC-Kwik*) works better with both DOS programs and *Windows* than does MS's SmartDrive, the cache included with *Windows* and MS-DOS. Disk caching, which speeds access to data, is a great utility on any computer with spare expanded or extended memory. But gaining that improvement means first installing the driver. Initial versions of DR DOS 6.0 weren't optimized for *Windows* users: The default installation prevented *Super PC-Kwik* from releas-



The DOS 5.0 shell, Microsoft's other version of a graphical interface, shields users from the command line.

ing memory to *Windows,* forcing puzzled users to dig into their manuals. The December update, DRI says, has solved this problem.

About the only add-in DR DOS lacks is a BASIC interpreter like MS-DOS's excellent QBASIC. Although both systems let you recall and edit previously issued commands, DR DOS lacks MS-DOS's ability to store strings of commands as macros—essentially batch files that execute from memory.

Memory Magic

MS-DOS and DR DOS do marvels with memory by loading memory management drivers via the CONFIG.SYS file when you boot up. Both DOS's load part of the operating system plus drivers and programs either into the high memory area (HMA), the first 64K of your system's second megabyte of memory, or into upper memory blocks (UMBs), the unused memory addresses in the area between 640K and 1MB. DR outdoes MS, however, with added UMB and HMA support for 80286- and 8088-based machines equipped with LIM EMS 4.0 memory and support for 80286s equipped with Chips and Technologies' SCAT, NEAT, and Leap memory management chip sets. For a plain vanilla 286 PC, though, MS-DOS releases 621K of conventional memory compared with DR DOS's 619K.

Until MS-DOS acquires similar talents (it does save 80286 users approximately 35K by loading part of the operating system in the HMA), DR DOS has an obvious edge for owners of those Chips and Technologies systems (see "The DOS's Duke It Out"). And for 386 and 486 users who need every last byte, DRI claims its DOS frees up 14K more in the lower 640 than MS-DOS 5.0 does. That 14K can put more resources at *Windows* users' disposal. However, unlike DR DOS, which puts its 27K EMM driver in UMB, MS-DOS puts its driver in extended memory, delivering 32K more free UMB space—128K versus 96K. If you've got over 110K of drivers and TSRs, MS-DOS will let you load more of them high, resulting in more conventional free space.

In Search of Support

It may not come in the box, but the feature people notice first is support. Many an eyebrow arched last year when Microsoft announced the MS-DOS 5.0 support policy: free for 90 days, $2-per-minute telephone assistance thereafter. According to Senior Product Manager Rich Tong, Microsoft thinks its customers won't encounter trouble after the 90-day period. "The vast majority of users only have problems getting the product running," he says. "Only those people who call instead of using the manual have to pay."

DRI's policy of free lifetime support certainly seems more generous, though DRI's technical support staff has drawn plenty of fire for being nonresponsive. DRI product manager Ken Pomper acknowledges there was a problem shortly after the product's introduction but explains that the company has tripled its technical staff and added on-line and fax support since then.

Windows Woes

Fixing support problems was relatively easy. The question of *Windows 3.1* compatibility is more vexing. "We've seen DR DOS 6.0 and *Windows 3.1* work together on some machines but not on others," says Pomper, but DRI's hands are legally tied because Microsoft has denied the firm's application to join the *Windows 3.1* beta program. According to Pomper, however, DRI is "committed to making *Windows 3.1* and DR DOS run together."

Microsoft's Rich Tong refuses to confirm or deny that DR DOS will run

THE DOS'S DUKE IT OUT

	MS-DOS 5.0	DR DOS 6.0
Price	$99.95	$99
Support	90 days free; $2 per minute thereafter	unlimited; toll number
FEATURES		
Available conventional memory		
386s and 486s (+UMB)	613K (+128K)	627K (+96K)
Standard 286s	621K	619K
286s with SCAT, NeAT, or LeAP chip sets	555K	628K
8088s with LIM EMS 4.0 memory	521K	612K
General		
Shells	Y	Y
Task switching from shell	Y	Y
Task switching from command line	N	Y
File, directory, and volume password security [1]	N	Y
Interactive control of CONFIG.SYS and AUTOEXEC.BAT execution	N	Y
On-line help	Y	Y
On-line documentation	N	Y
File undelete	Y	Y
Bundled utilities		
Memory usage viewer	Y	Y
Disk cache	Y	Y
File compression	N	Y
Disk defragger	N	Y
File transfer	N	Y
BASIC interpreter	Y	N

[1] MS-DOS 5.0's shell provides a password for program launching; DR DOS 6.0 password-protects files, directories, and volumes.

Memory Type	Total Bytes	(Kbytes)	Available	
Conventional	655,360	(640K)	641,056	(626K)
Upper	135,168	(132K)	49,232	(48K)
High	65,520	(64K)	8,240	(8K)
Extended	3,407,872	(3,328K)	0	(0K)
Extended via XMS	N/A		3,129,344	(3,056K)

```
Total bytes available to programs (Conventional+Upper) : 714864  (698.1K)
Largest executable program size :                        627104  (612.4K)
Largest available upper memory block :                   87120   ( 85.1K)

    3407872 bytes total contiguous extended memory
          0 bytes available contiguous extended memory
    3087360 bytes available XMS memory
            MS-DOS resident in High Memory Area
```

Both products generate reports showing how memory is allocated. DR DOS (top) frees up slightly more conventional memory. MS-DOS (bottom) gives more upper memory, although it does so at the expense of available XMS.

Windows 3.1, noting that *Windows* was designed to run under MS-DOS. "We can only guarantee the quality of our products when they're running under MS-DOS," he says, adding that it's the "job of any clone maker" to ensure compatibility. Tong also says Microsoft isn't taking any particular steps to ensure DR DOS compatibility with *Windows 3.1*. As to DRI's exclusion from *Windows 3.1* testing, he states flatly, "we don't work with clone vendors."

That policy, according to DRI's Pomper, harms Microsoft's own customers—*Windows* users who happen also to use DR DOS. In addition, Pomper believes that Microsoft has treated DRI unfairly. He claims that Microsoft has changed the *Windows* memory management interface—the way memory managers such as DR DOS's EMM386.SYS work with *Windows*—and that it refuses to provide DRI with the specification. Pomper adds that Microsoft has provided other memory manager manufacturers, such as Qualitas, with the spec.

"They [Qualitas] are our partners," says Brad Silverberg, Microsoft's vice president of personal systems, chief of MS-DOS and *Windows* development. "We have changed the way *Windows* manages protected mode memory," he says, adding "there's no code inside *Windows 3.1* that checks 'is this MS-DOS?' " Silverberg makes no bones about Microsoft's competitiveness: "Top DRI executives have implied strongly in the press that they are interested in building a *Windows* clone. And I'm going to send them a beta copy?" His advice for DR DOS users concerned about *Windows* compatibility is equally blunt: "It's the same as for people who want to run *Windows* on Macintoshes or Suns—you're on your own."

Crapshoot of the Nineties

Should buyers go with DR DOS, an operating system with loads of extras and a few glitches, or stick with the Microsoft family? It's hard not to like DRI's nice-guy determination and commitment to satisfy its customers. But DRI couldn't have picked a tougher foe than Microsoft, which holds the trump card of DOS's future: *Windows*. "We're certainly investing very heavily in MS-DOS; its success has been phenomenal," says Silverberg. He allows that future versions will offer more support for portable computers as well as closer integration with *Windows*. "There are a number of things we did in *Windows 3.1* to make it work better with MS-DOS. In the future, some *Windows* functions, such as virtual 386 management, will migrate to DOS." And the closer MS-DOS and *Windows* grow, the more likely that DRI will continue to play catch-up, custom fitting DR DOS to *Windows'* whims.

But DRI may have its own ace in the hole in the form of parent company Novell. According to IDC's McSharry, users have only begun to see the benefits of the merger. "In the future," she says, "as the ability to hook into network services becomes more important to organizations, any cooperation at the systems level is going to be a boon." In the next 18 months or so, McSharry predicts, we'll see a version of DR DOS that's optimized for NetWare performance. Microsoft's Silverberg doubts, however, that the NetWare connection will vault DR DOS to the top of the charts; he believes it's the software, not the network, that determines which operating system you'll choose. "On the client," he says, "applications rule."

Scott Spanbauer is a contributing editor for PC World. *He can be reached on PC World Online (see page 8 for more information).*

WHERE TO BUY

DR DOS 6.0
Digital Research, Inc.
70 Garden Ct.
Box DRI
Monterey, CA 93942
800/274-4374,
408/649-3896
List price: $99
Reader service no. 637

MS-DOS 5.0
Microsoft Corp.
One Microsoft Way
Redmond, WA
98052-6399
800/426-9400
List price: $99.95
Reader service no. 638

The information service that's more than a retriever. It's your own personal bloodhound.

Dow Jones News/Retrieval is not only loyal, it's extraordinarily obedient. Not only will it fetch facts for you, but all on its own it will relentlessly—and continuously—track down exactly the news and information you need.

The way it works is simple. With just a few keystrokes, you can set up separate electronic folders for the topics you want to be kept current on. Then News/Retrieval will automatically search through a multitude of Dow Jones news sources. And feed your electronic folders a steady stream of timely, preselected news, which you can read at your convenience.

All of it gathered while you're attending a meeting or writing a report.

So you can spend your time actually using the information, instead of gathering it.

Up-to-the-second information that's drawn from our proprietary newswires, including the Dow Jones News Service and the Capital Markets Report, plus PR Newswire, BusinessWire and the full text of *The Wall Street Journal*. As well as hundreds of local, regional and national business publications.

In addition to the news, you'll also have access to a wealth of historical business and financial data.

To send News/Retrieval chasing after the news you need, simply call our toll-free number.

*Just $29.95 gets you started and includes three free hours.**

For more information, call
1-800-522-3567, Ext. 295.

DOW JONES NEWS/RETRIEVAL®
The lifeblood of business.℠
Another Service from Dow Jones Information Services.

*One-time offer to new U.S. members only. Free time is per account and must be used within 30 days after receipt of password. Certain data bases have charges in addition to usage fees, which are excluded from the free-time offer.

Dow Jones News/Retrieval and Dow Jones News Service are registered service marks, Capital Markets Report is a service mark and *The Wall Street Journal* is a registered trademark of Dow Jones & Company, Inc.
© 1992 Dow Jones & Company, Inc. All Rights Reserved.

MULTIMEDIA. POWERFUL. SEXY. FUN. IN YOUR HOME. *TODAY.*

MPC WORLD

multimedia *\mul-ti-med-i-a*
1 : PC applications that incorpo
sound, video, and animation. 2 :
hottest buzzword in the PC indus

GET THE FIRST LOOK at what the multimedia PC experience co mean in your life. Imagine the excitement of an encyclopedia tha talks to you, PC games that rival the quality of the video arcade being able to listen to– and even compose!– music on your hom PC with CD player sound. Want to layer a soundtrack and titles o your favorite home video? It's no problem with today surprisingly affordable systems and software. Affordable an powerful– today's multimedia PCs do double duty when you decide to bring work home. They're powerful enough to handle the business applications you use at the office, as well as the entertainment and education applications you'll enjoy at home.

You'll want to get in on this new technology soon, if you haven't started already. Let our editors tell you who's making what, how it works, how much it costs, and where to buy it. Their first person accounts of the magical journey into multimedia will capture your imagination and get you started on your own adventure. Whether you (or your kids) are seeking entertainment or lifetime education, you'll find the full story in MPC World.

FREE DEMO GAME DISK!
ALL NEW!
SUPER TETRIS
FOR
WINDOWS

The Latest, Greatest Demo Version of the Classic PC Game

YOURS FREE

When you subscribe to MPC World.

(See back for details.)

MPC WORLD

SPECIAL $14.95 CHARTER RATE

FREE DEMO GAME DISK! ALL NEW! SUPER TETRIS FOR WINDOWS

☐ **YES!** I Want to experience the excitement of Multimedia PCs. Sign me up as a Charter Subscriber. I want one year (6 bi-monthly issues) of MPC World at the introductory rate of $14.95. That's 37% off the annual newsstand price. A great value, and a great new magazine.

NAME

ADDRESS

STREET

CITY, STATE, ZIP

Offer good only in the U.S.

MPC WORLD'S FAX NUMBER 1-415-882-0936

4AEA7

Recycled Paper

MPC WORLD

SPECIAL $14.95 CHARTER RATE

FREE DEMO GAME DISK! ALL NEW! SUPER TETRIS FOR WINDOWS

☐ YES! I Want to experience the excitement of Multimedia PCs. Sign me up as a Charter Subscriber. I want one year (6 bi-monthly issues) of MPC World at the introductory rate of $14.95. That's 37% off the annual newsstand price. A great value, and a great new magazine.

NAME

ADDRESS

STREET

CITY, STATE, ZIP

Offer good only in the U.S.

MPC WORLD'S FAX NUMBER 1-415-882-0936

4AEA7

Recycled Paper

MPC WORLD

SPECIAL $14.95 CHARTER RATE

FREE DEMO GAME DISK! ALL NEW! SUPER TETRIS FOR WINDOWS

☐ YES! I Want to experience the excitement of Multimedia PCs. Sign me up as a Charter Subscriber. I want one year (6 bi-monthly issues) of MPC World at the introductory rate of $14.95. That's 37% off the annual newsstand price. A great value, and a great new magazine.

NAME

ADDRESS

STREET

CITY, STATE, ZIP

Offer good only in the U.S.

MPC WORLD'S FAX NUMBER 1-415-882-0936

4AEA7

Recycled Paper

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO.1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE.

MPC WORLD
Subscription Department
P.O. Box 54665
Boulder, Colorado 80323-4665

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO.1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MPC WORLD
Subscription Department
P.O. Box 54665
Boulder, Colorado 80323-4665

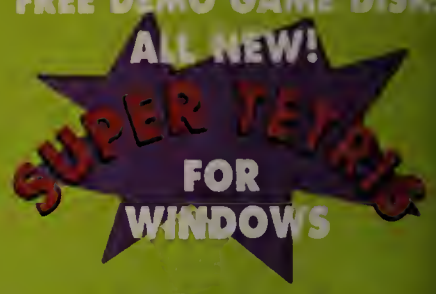
NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO.1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MPC WORLD
Subscription Department
P.O. Box 54665
Boulder, Colorado 80323-4665

FREE DEMO GAME DISK!



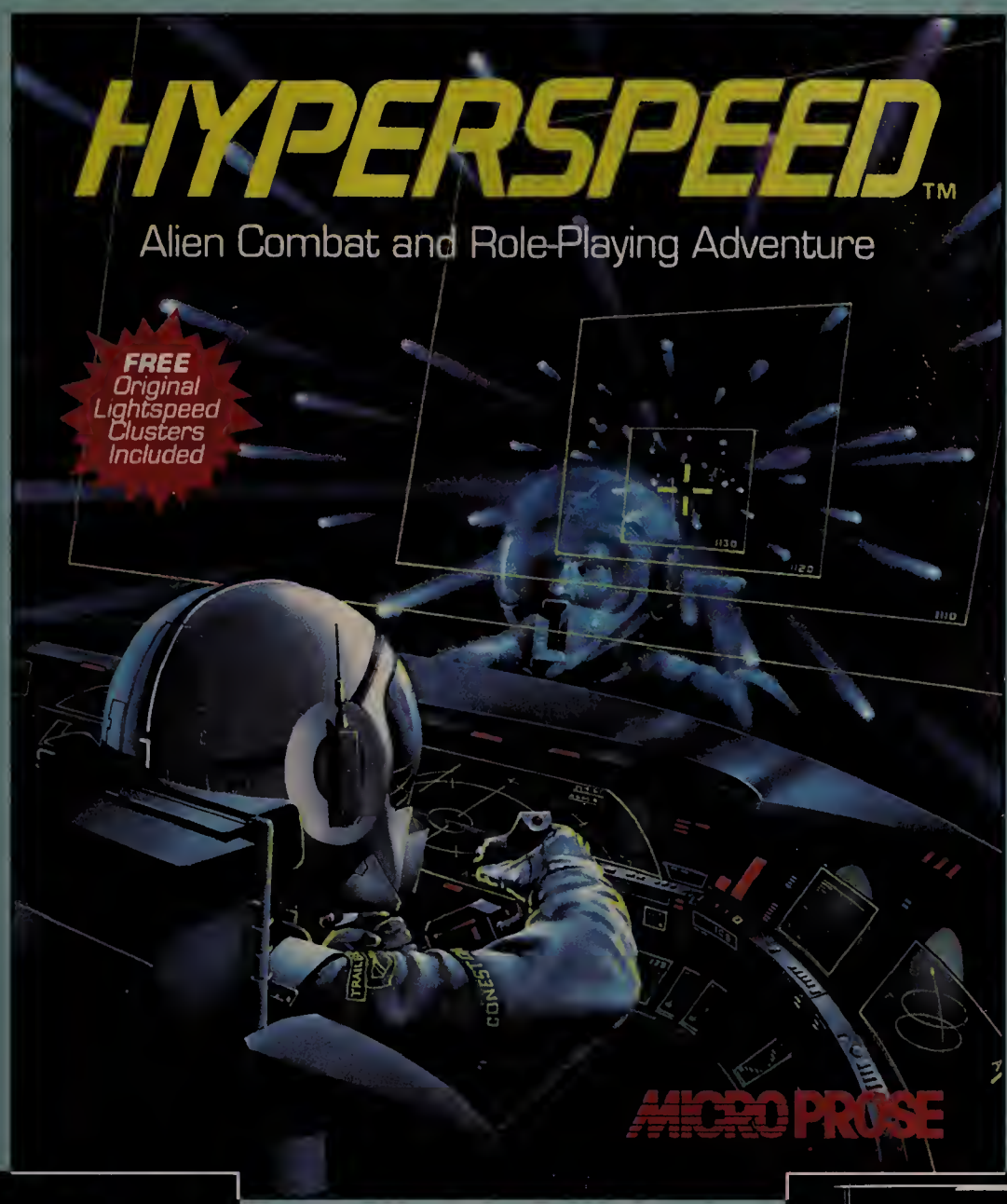
Experience the action and excitement of the world-favorite PC game TETRIS– in its latest, hottest version for 1992– SUPER TETRIS FOR WINDOWS! You can reserve your copy today when you subscribe to MPC WORLD– the latest, hottest multimedia magazine on the market today.

Call or fax in your order and for the low introductory price of $14.95, you'll receive 6 information-packed issues that cover multimedia– the newest systems, the smartest upgrades, the best software PLUS a great new demo game– Super Tetris for Windows!

FREE WITH YOUR PAID SUBSCRIPTION

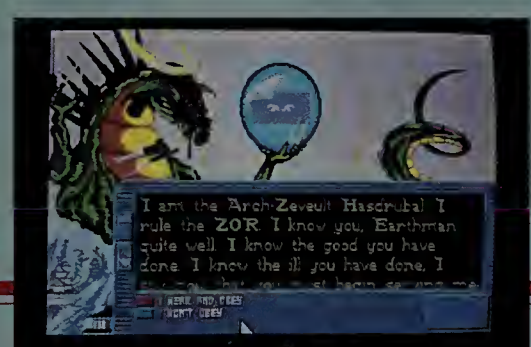
CHARTER SUBSCRIPTION SAVINGS! SIGN UP HERE FOR **37%** DISCOUNT!

"Aliens approaching... fightercraft launched."



Look for an F-117A Stealth Fighter Demo in specially marked packages of TDK Micro Floppy Disks.
TDK.

IBM-PC screens shown.



There's no room for error when traveling faster than the speed of light, racing through star systems in a desperate search for a new world to house Mankind. But there are plenty of opportunities for mistakes. Alien races of every conceivable size, shape, temperament and sophistication seek to aid, use, corrupt or destroy you — and you don't know which.

- **Diplomacy**. Negotiate with a variety of alien races. Forge strategic treaties and alliances with those you trust. Each alien race is uniquely animated.
- **Firepower**. Pilot a massive starship armed with remote-controlled fightercraft, kamikaze attack ships, a devastating plasma gun and high-tech probes. Customize the ship's engine and weapons systems. Battle alien warships in Super 3-D Graphics.

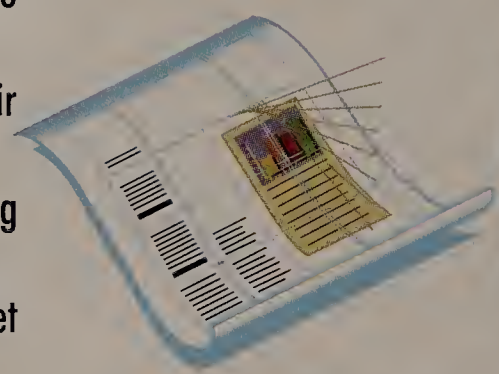
Hyperspeed is a dramatic enhancement of MicroProse's popular interstellar action epic, *Lightspeed*, featuring four giant star clusters to explore, an all-new animated opening sequence, more aliens and more role-playing adventure.

For IBM-PC/Tandy/compatibles. For the latest information on release dates and availabilities, call MicroProse Customer Service at 301-771-1151, 9 am to 5 pm EST, weekdays. © 1991 MicroProse Software, Inc., 180 Lakefront Drive, Hunt Valley, MD 21030.

MICROPROSE™
ENTERTAINMENT • SOFTWARE

Circle 160 on reader service card

TIPS FOR GREAT REPORTS



Create reports that get read—and understood. Two experts reveal their secrets for producing documents that get the point across but don't require a degree in design.

MARGARET Y. RABB AND RICHARD SCOVILLE

You work hard, and you're using your PC to do your job faster and better. But does anyone *notice?* Do the reports you produce still look like they just rolled out of Aunt Gertrude's Selectric?

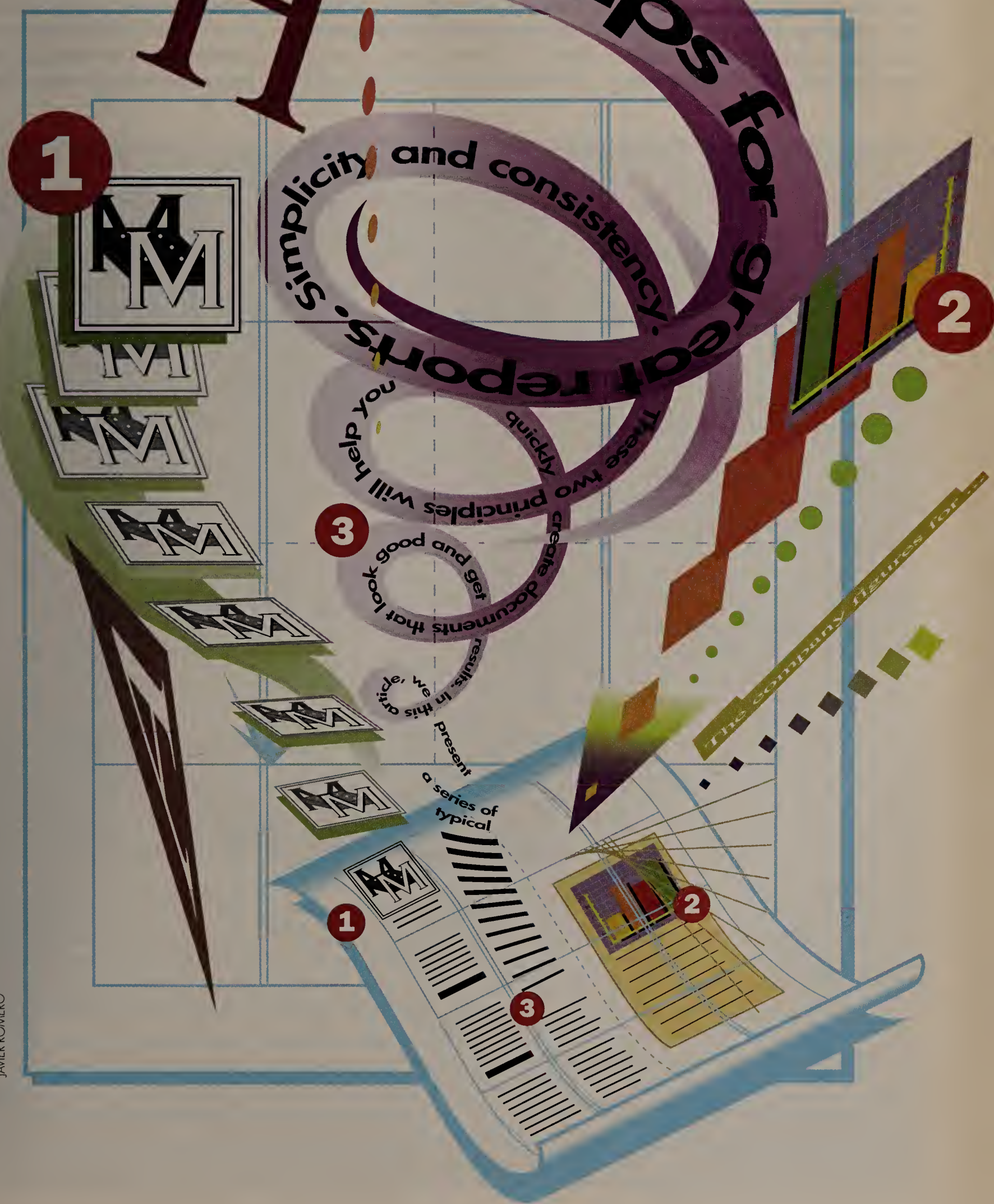
They don't have to. With just a little effort, you can coax appealing documents from the spreadsheet programs and word processors you use every day. And your HP LaserJet printer stands ready with some classic typefaces to add flair and style to your reports. The trick is knowing how to exploit these features.

Simplicity and consistency. These two principles will help you quickly create documents that look good and get results. In this article, we present a series of five typical business documents to illustrate these essential rules of thumb, along with tips to give your next project a sense of direction. We used five popular programs—*Word for Windows 1.1, WordPerfect 5.1* for DOS, *WordPerfect for Windows, Excel,* and *1-2-3* release 2.3—and an HP LaserJet III printer to prepare the documents, which chronicle a formative episode in the career of Dave Richards, marketing executive for the fictional Matrix Mattress Corporation.

Keep it simple. The goal of any business document is to communicate important information to busy people who are not as familiar with the details as you are or as interested in them. To be effective, your report must focus their attention and not waste their time. That means you must distill your material into concise points, organize those points into a hierarchical outline, then make the structure of the information on the

"Tips for great reports. Simplicity and consistency.

Hence, in this article, we present a series of typical results. These two principles will help you quickly create documents that look good and get



JAVIER ROMERO

page match the structure of your argument. Use headings and subheads as visual cues to the flow of points in your document.

Start by asking the question, What is this document intended to accomplish? For example, the goal of a proposal is to win support for your project from specific individuals. Next, think carefully about your audience, the knowledge and predispositions of its members, and the information they'll need to reach the conclusions you want them to. Make an outline and ruthlessly remove any points that don't help help your readers reach that conclusion. Remember that while you're intrigued with the details of how you collected and analyzed the information, your audience is mainly interested in your conclusions.

Keep it simple as you select the ideas, text, figures, and images to go on the page. After you've written the text of a proposal or report, take time to edit it. Look for repetition, and eliminate all but the clearest statement. As in Dave's proposal and letter, use active, colorful,

PROPOSAL

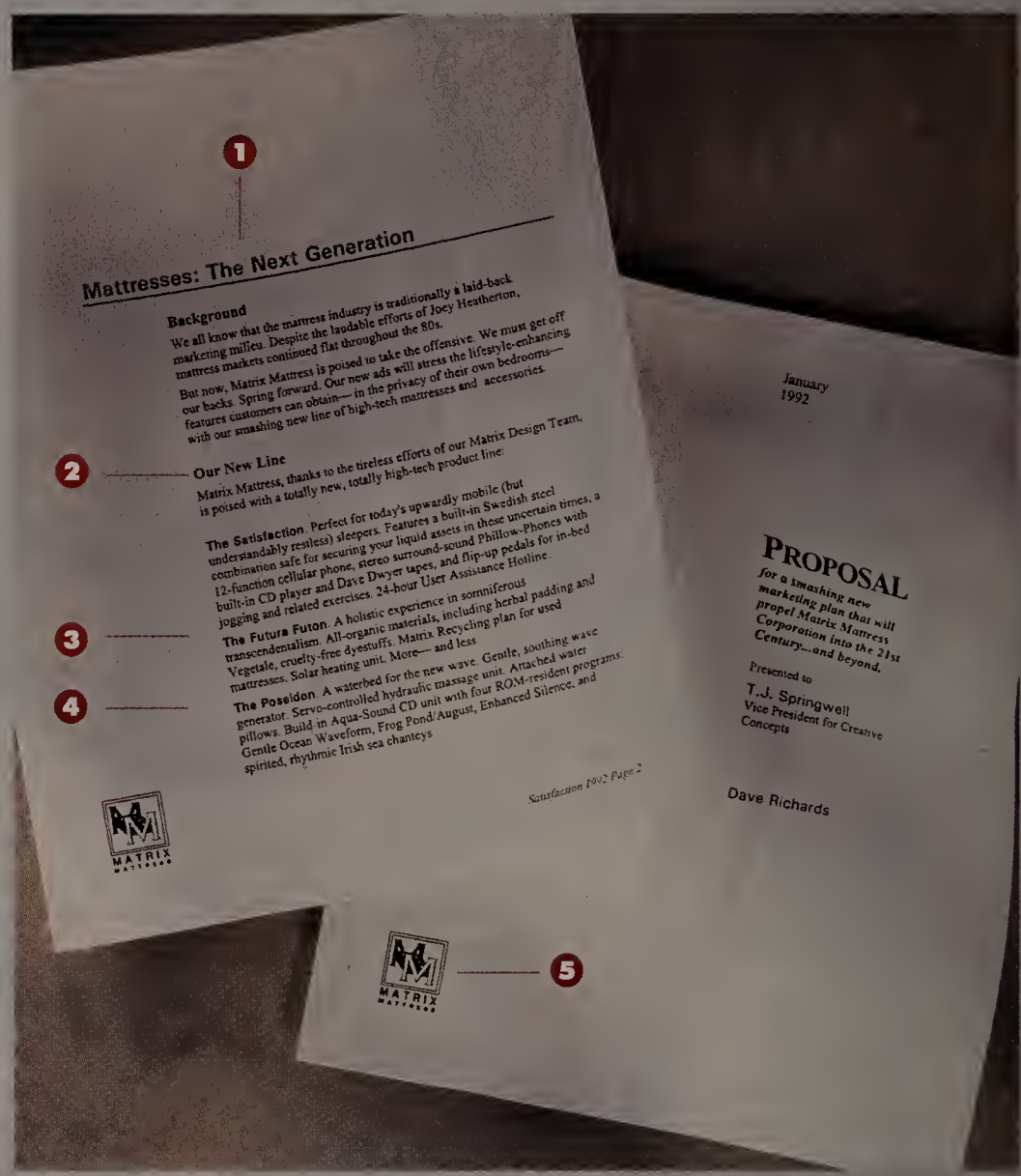
1 Consistent font usage: sans serif Univers for large heading, serif for subheads. Boldface sets heads apart from body text.

2 Setting subheads closer to following paragraph than preceding one connects them visually to their text.

3 Extra half-line of spacing between paragraphs lightens page, entices reader with bite-size reading units.

4 Sans serif typeface draws attention to mattress models but doesn't compete with subheads.

5 On cover page, strongest element —Matrix logo—anchors first column.



The Matrix logo in this *Word for Windows 1.1* document was available as a TIFF file on the office network. The cover page features a strong, asymmetrical line at the fifth grid column. The ample white space focuses attention on the word *Proposal* and on the logo. Notice how white space also helps to emphasize Dave's name.

To prepare the document, we set the left, right, and bottom margins at .75 inch, the top margin at 2.7 inches. We set tab stops every inch. On the cover page, we used Format Position to override the top margin for the date. The cover uses Times—bold and bold italic. The names below the elements are in Univers.

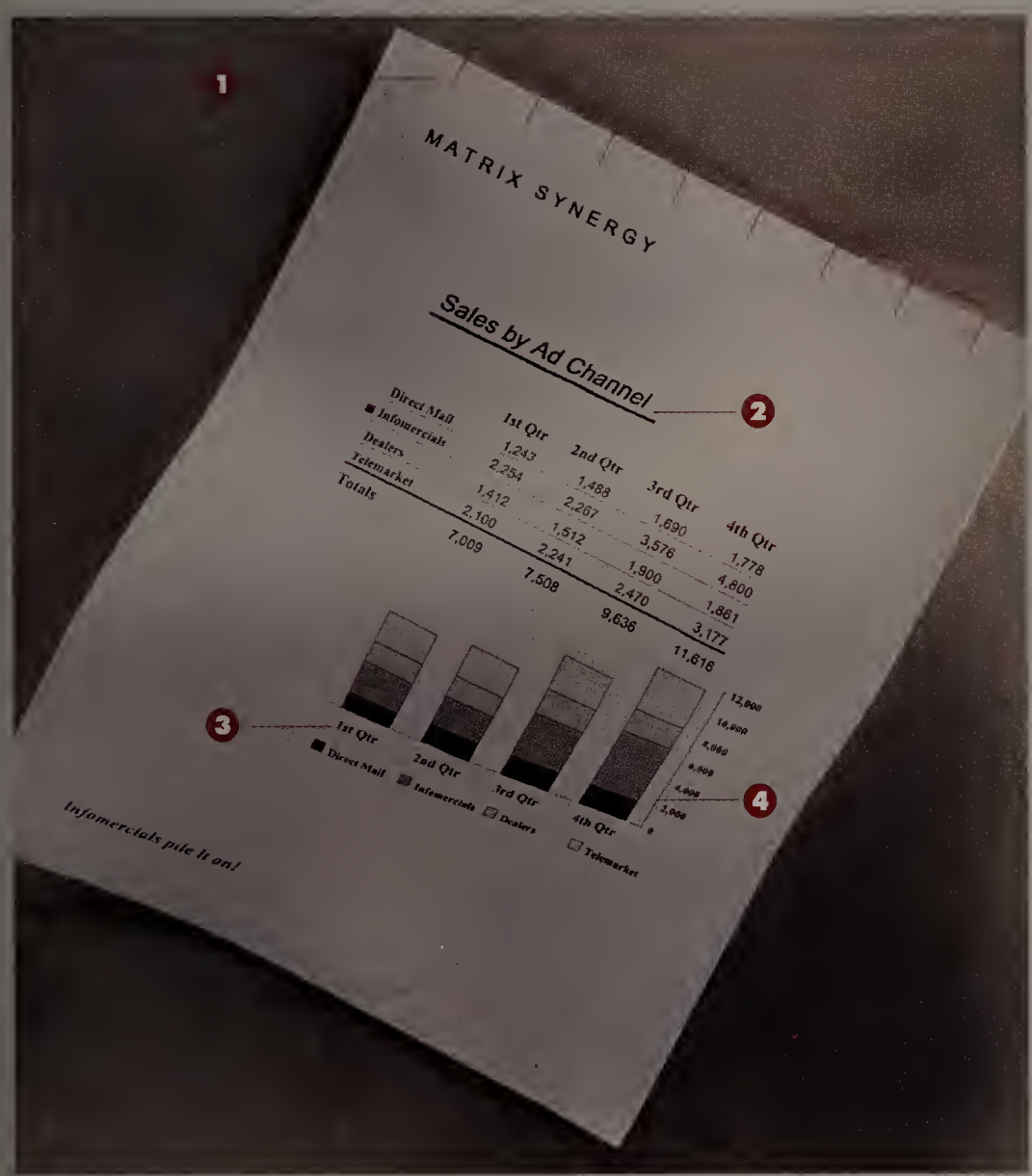
Page 2 (left) begins a new Section, with a footer to place the recurring logo. We created three formats: Heading, for the major headings, is 24-point Univers Bold, with a 36-point space before the paragraph and a thick border below. Subheading is 14-point Times Bold, left indent at 2 inches, with an 18-point space above. Body Text is 12-point Times, with a 2-inch left indent and a 5-point space between paragraphs.

PHOTOGRAPHS BY MICHAL VENERA

direct language. Avoid the passive voice: instead of "the features will be stressed by our ads," say "our ads will stress the features." Use a figure, graph, or diagram in place of a lengthy explanation whenever possible, like the bar chart in the sales report below.

Keep it simple as you format your document. Use plenty of white space to invite the reader in. When a page starts to get crowded, try to prune the text. Concentrate the white space on one side of the page instead of splitting it evenly; you'll achieve a more interesting, asymmetrical composition and lighten the appearance of text-heavy documents.

Use just one or two fonts. A simple rule is to use a serif font such as Times, Century Schoolbook, or Palatino for body text, and a sans serif font like Helvetica or Avant Garde for headings. The letters of a serif type face have little "feet" at the ends of the strokes that improve readability at small sizes; sans serif faces do not. In the documents in this article, we've used only Times (a serif face) and Univers (sans serif), both



SALES REPORT

1 Seven spreadsheet columns—each 1 inch wide—make a seven-column grid structure.

2 Focus of the piece, Sales by Ad Channel, set in Univers Bold, with an underline courtesy of Excel's Format Borders option.

3 Bar spacing in chart matches grid structure. Repeated column headings in the x-axis labels at bottom of chart add clarity.

4 For black-and-white laser printer graphs, use shading patterns instead of cross-hatching. Putting darker shades at bottom anchors the bars.

Dave's proud report on the success of his project takes the form of an *Excel* worksheet. Dave sought to eliminate all extraneous information so his boss will digest its meaning at a glance. The topic of the report is emphasized up front: "Sales by Ad Channel." The important data is presented in detail and summarized in a graph, and the bottom-line conclusion is made explicit: "Infomercials pile it on!"

Excel could not import Matrix's TIFF format logo, so we defined the grid with text elements only. The report employs our standard seven-column grid structure: We set the page margins to .75 inch all around with File Page-Setup; then, since *Excel* measures column widths in character units, we used File Print-Preview to set the column widths to 1 inch. The *Matrix Synergy* text at the top is left-aligned in a text box. To make the graph fit the grid, we just stretched it horizontally with the mouse until the bars matched the grid structure.

resident in the LaserJet III.

For body text, select a serif face in the 10-to-12-point range. (Typewriter text is 12 point; the page you're reading is set in 9-point type.) Use variants of your typefaces to distinguish the kinds of information in your document. Use italic for technical and foreign terms, publication titles, and quotations; use bold for headings and for emphasis. Avoid underlining.

To make blocks of text easier to read, add extra space between paragraphs; double-spacing works, but most programs let you add partial spacing at paragraph breaks as shown in the proposal. Put proportionally more space above a subhead and less between the subhead and the following text. Fully justified body text (with even left and right margins) gives a finished look, but left-justified body text (ragged right) is often easier to read.

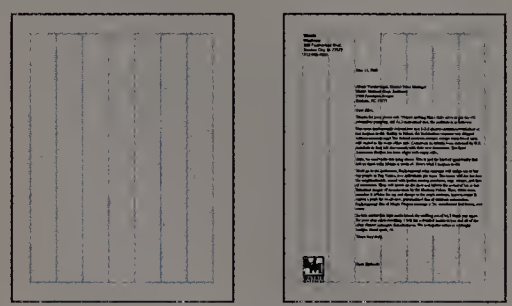
Before you take to the computer, quickly sketch the page, using a simple grid as a skeleton. Use an odd number of columns—five or seven work well—

LETTER

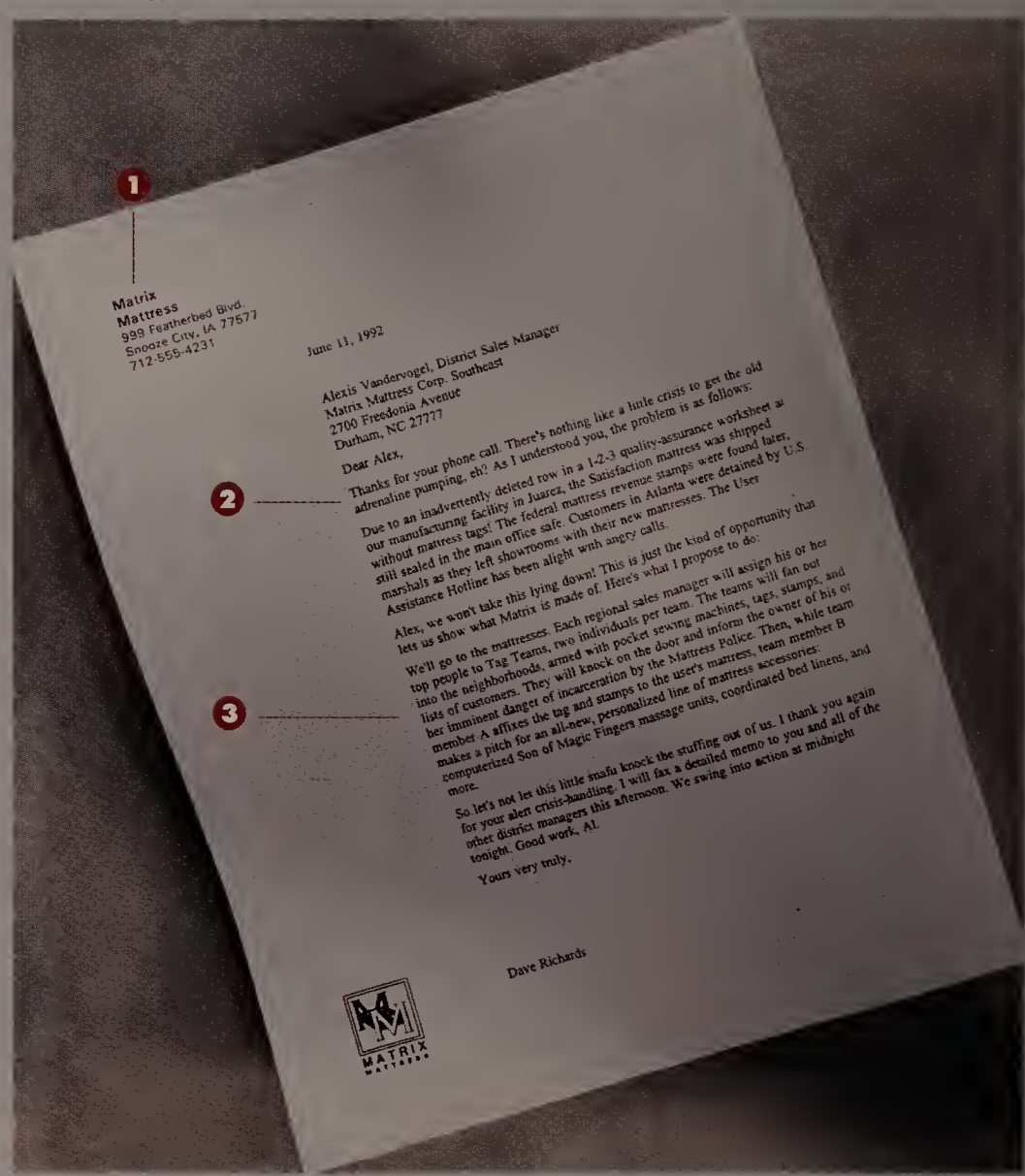
1 Company name at top and graphic element at bottom frame the letter. White space along edges focuses attention on text.

2 Short, punchy paragraphs, with extra space between them, help convey lively, conversational tone.

3 Contrasting typefaces make text of letter distinct from letterhead, even in this laser-printed black-and-white design.



The underlying seven-column grid is flexible enough to accommodate nearly any document.



Matrix
Mattress
999 Featherbed Blvd.
Snooze City, IA 77677
712-555-4231

June 11, 1992

Alexis Vandervogel, District Sales Manager
Matrix Mattress Corp. Southeast
2700 Freedonia Avenue
Durham, NC 27777

Dear Alex,

Thanks for your phone call. There's nothing like a little crisis to get the old adrenaline pumping, eh? As I understood you, the problem is as follows:

Due to an inadvertently deleted row in a 1-2-3 quality-assurance worksheet at our manufacturing facility in Juarez, the Satisfaction mattress was shipped without mattress tags! The federal mattress revenue stamps were found later, still sealed in the main office safe. Customers in Atlanta were detained by U.S. marshals as they left showrooms with their new mattresses. The User Assistance Hotline has been alight with angry calls.

Alex, we won't take this lying down! This is just the kind of opportunity that lets us show what Matrix is made of. Here's what I propose to do:

We'll go to the mattresses. Each regional sales manager will assign his or her top people to Tag Teams, two individuals per team. The teams will fan out into the neighborhoods, armed with pocket sewing machines, tags, stamps, and lists of customers. They will knock on the door and inform the owner of his or her imminent danger of incarceration by the Mattress Police. Then, while team member A affixes the tag and stamps to the user's mattress, team member B makes a pitch for an all-new, personalized line of mattress accessories: computerized Son of Magic Fingers massage units, coordinated bed linens, and more.

So let's not let this little snafu knock the stuffing out of us. I thank you again for your alert crisis-handling. I will fax a detailed memo to you and all of the other district managers this afternoon. We swing into action at midnight tonight. Good work, Al.

Yours very truly,

Dave Richards

MATRIX MATTRESS

Trouble! A regional sales manager has alerted Dave to a problem, and this letter is Dave's decisive response.

The white space between the name and address at the top and the logo at the bottom sets off the letter. Dave's name gets emphasis from its position to the right of the logo. A letterhead gives you limited space for design—make the most of it.

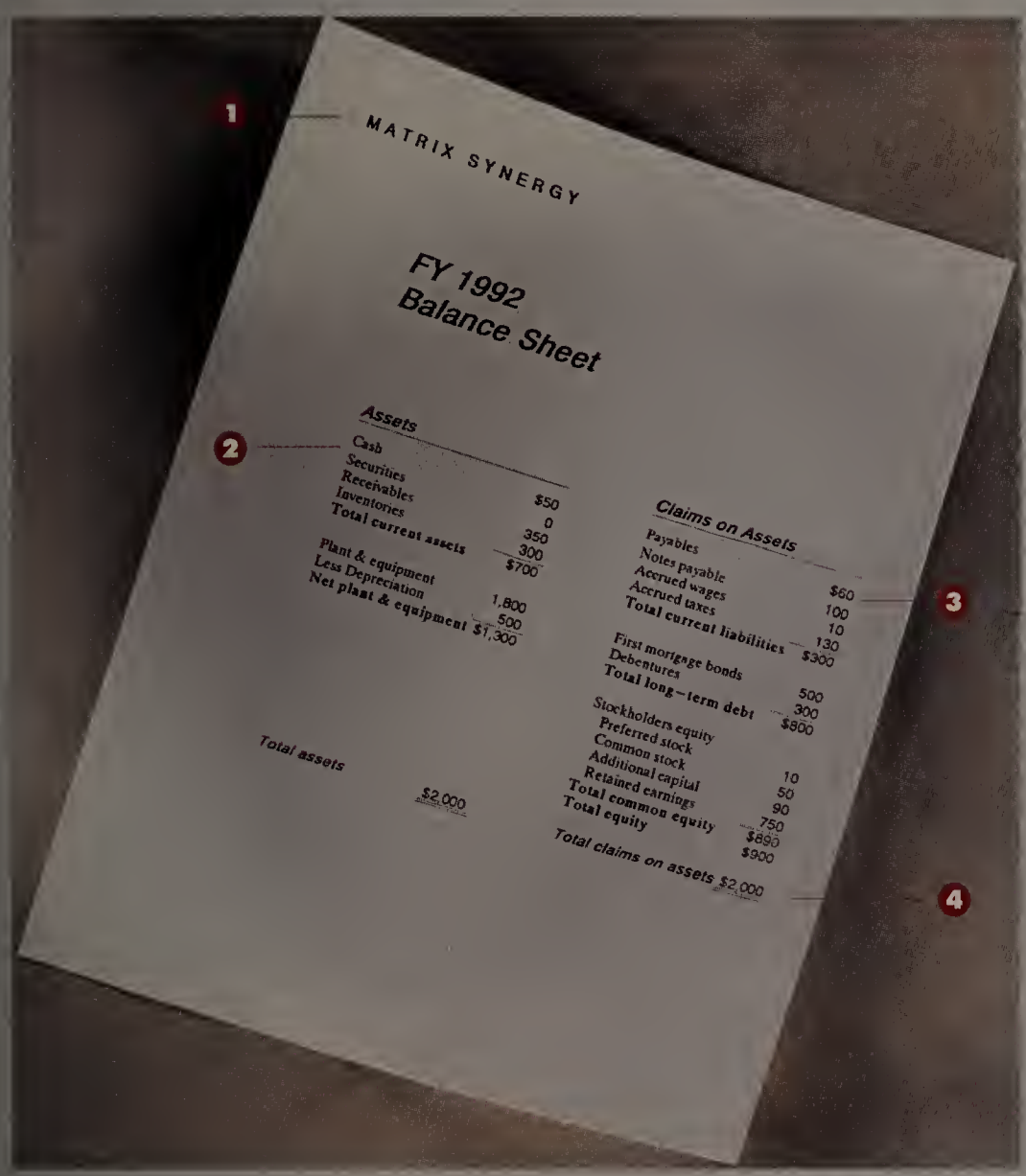
This letter was prepared in *WordPerfect for Windows*. Its left margin was set at 2.75 inches, the others at .75 inch. The address is in a page-anchored text box positioned .75 inch from the top and left edges of the page. The logo at the bottom is a page-anchored graphics box embedded in a header, in case the letter continues on additional pages. Both boxes have text wrap set to 'No.' This keeps the typing screen clean and ensures that you won't have to adjust a left indent as you type. The body text is 11-point Times.

We printed the letter with *Windows'* LaserJet III driver instead of *WordPerfect*'s printer driver because it delivers scanned TIFF files with better resolution.

and fit the headings, figures, paragraphs, and other components to the grid lines. The grid organizes the white space; an odd number of columns makes the layout pleasingly asymmetrical.

Most of the documents here use the same seven-column grid (see Dave's letter, left). With .75-inch left and right margins, each column is 1 inch wide, which is easy to measure in all the programs. In word processors such as *Word* or *WordPerfect,* set the default tabs to 1 inch, so that the tab settings on the page ruler mark the column boundaries. In spreadsheets, set the width of all columns to 1 inch, then arrange labels and values to fit the grid.

If you use your grid structure consistently across a series of documents, and if you use typefaces and graphic elements such as logos consistently, you can easily tie your documents together with a common look that makes your reports identifiable and distinctive. For example, compare the arrangement of text in the letter and the proposal. Each employs the two left columns for the



BALANCE SHEET

1 Due to nature of material and structure of 1-2-3, column widths don't fit page grid. But wide left margin and graphic elements in first column continue pattern.

2 Placing two columns off center enlivens page.

3 As in sales report, sans serif Univers used for numbers, serif Times for labels.

4 Bold italic treatment of Assets and Claims headings echoed in Total labels at bottom.

Dave's team contemplates with well-earned satisfaction Matrix Mattress's solid position at the end of the fiscal year. We prepared this balance sheet with *1-2-3* release 2.3. Like *Excel, 1-2-3* cannot import TIFF images, so as with the sales report , we've skipped the Matrix logo and allowed the text to carry the page structure. This spreadsheet bears other similarities to the sales report, too, particularly in the type treatment. It uses a serif face for text and a sans serif for labels.

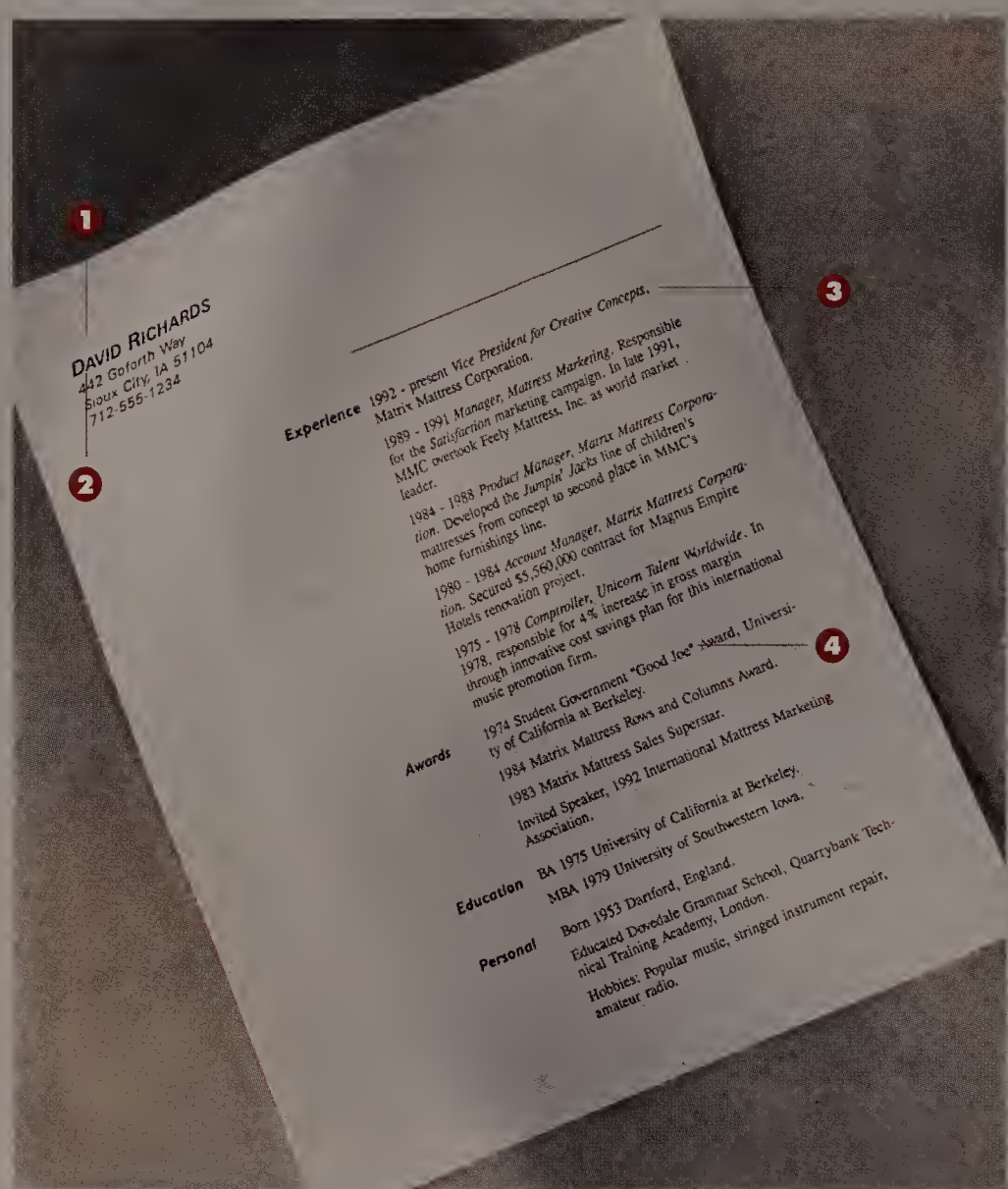
For this document only, we broke with the seven-column grid structure to establish two wide columns for text and two narrow ones for numbers; but combined, they're still consistent with the other documents. The bold sans serif label at the top of the page, for instance, matches that of the *Excel* report and aligns with column one of the grid. The wide left margin gives the page a dynamically asymmetrical look.

We used *1-2-3*'s Wysiwyg fonts for the balance sheet: Dutch (a Times look-alike) for row headings, and Swiss (a Univers facsimile) for titles, column headings, and numbers.

logo and/or header and the right five columns for text. The same pattern is repeated in the résumé, with an additional column reserved for the headings *Experience, Awards,* and so on.

Finally, don't be afraid to experiment. Even for the pros, it's a process of "try it and trash it." And don't get discouraged if your attempts take longer than planned; making it look simple always entails a little extra effort. But with all the programs, you can leverage your efforts by creating a template—an empty document that you repeatedly retrieve and fill with new data.

Margaret Y. Rabb is director of design for Southern Media Design and Production in Chapel Hill, North Carolina. Richard Scoville is a contributing editor for PC World and a software training consultant. They are coauthors, with Johnna Webb, of Fit to Print with Ventura Publisher, to be published in spring by M&T Books (Redwood City, California). Scoville can be reached on PC World Online (see page 8 for more information).


DAVID RICHARDS
442 Goforth Way
Sioux City, IA 51104
712-555-1234

Experience 1992 - present Vice President for Creative Concepts, Matrix Mattress Corporation.
1989 - 1991 Manager, Mattress Marketing. Responsible for the Satisfaction marketing campaign. In late 1991, MMC overtook Feely Mattress, Inc. as world market leader.
1984 - 1988 Product Manager, Matrix Mattress Corporation. Developed the Jumpin' Jacks line of children's mattresses from concept to second place in MMC's home furnishings line.
1980 - 1984 Account Manager, Matrix Mattress Corporation. Secured $5,560,000 contract for Magnus Empire Hotels renovation project.
1975 - 1978 Comptroller, Unicorn Talent Worldwide. In 1978, responsible for 4% increase in gross margin through innovative cost savings plan for this international music promotion firm.

Awards 1974 Student Government "Good Joe" Award, University of California at Berkeley.
1984 Matrix Mattress Rows and Columns Award.
1983 Matrix Mattress Sales Superstar.
Invited Speaker, 1992 International Mattress Marketing Association.

Education BA 1975 University of California at Berkeley.
MBA 1979 University of Southwestern Iowa.

Personal Born 1953 Danford, England.
Educated Dovedale Grammar School, Quarrybank Technical Training Academy, London.
Hobbies: Popular music, stringed instrument repair, amateur radio.

RESUME

1 Dave's name is the most important element, so it's big. Large and small caps give an even, balanced appearance.

2 We've used WordPerfect's [AdvLft] codes (Shift+<F8>, Other Advance Left) to compress spacing of the "D," "a," and "v" in Dave's first name.

3 Use of italics for job titles provides visual relief and helps the reader scan the page.

4 True quotes help the document look professional. To select the opening quote with WordPerfect's typographic character set, press <Ctrl>-V and enter 4,30 for an opening quote.

Mission accomplished. Dave is enjoying his new position at Matrix and dreaming of even bigger and better things elsewhere. This résumé, prepared with *WordPerfect 5.1* for DOS, returns to the seven-column grid. The organization of topics is fairly standard. A good résumé is brief and enticing, meant to secure further contact. It will surely be read in a hurry, so it must grab the reader's attention. Details are better left for the interview. The present layout is easy to scan.

All margins were set at .75 inch. Items below the horizontal line are formatted with parallel columns, whose margins at 3.75 inches define the fourth grid column.

The base font for this document is 12-point Times. We used styles to handle the font changes: Title changes the font to 11-point Univers Oblique for Dave's name and address at the top; Callout makes headings in the third grid column 13-point Univers Narrow Bold Oblique. In addition, we used [VRY LARGE] and [SM CAPS] codes to emphasize Dave's name.

Introducing The First Mobile Disks.

Our new 40 to120MB portable hard drives are on the move.

Now, wherever you go, take advantage of these great Mobile Disk features.

Snap on a hard drive in three minutes. You don't need tools. You don't have to open the computer. Simply plug Mobile Disk into any portable or PC parallel printer port and plug your printer into Mobile Disk. The software configures itself, and you're ready to go.

Small and sturdy. Mobile Disk is so durable and light, you can carry it all day and hardly notice it's there.

Carry all your data with you. You'll always have the right files, programs, and fonts at the right time. Take your files home, to your portable, or down the hall. Why carry files on floppies, when you can take your whole work environment with you?

Grows with you. Add 40, 80, or 120 megabytes of data storage as you need it. Connect up to four drives for maximum storage. It's quick and easy.

Easy backup. Copy critical files to Mobile Disk, or back up an internal hard drive without learning new software. Protect your data from fire or damage. Lock it up, safely.

$399
Special Introductory Offer!

For a limited time, you can order Mobile Disk 40 for just $399. Call today to order, or for more information:

1-800-821-2151

SYSGEN

Sysgen, Inc. 556 Gibraltar Drive, Milpitas, CA 95035
Sysgen is a registered trademark, and Mobile Disk is a trademark of Sysgen, Inc
$399 price includes drive, cable, power supply, and documentation. All Sysgen products are covered by a 12 month warranty

USA & CANADA • 1-800-252-0286 • OPEN 24 HOURS EVERY DAY

The PC Zone

Price, Availability and Service

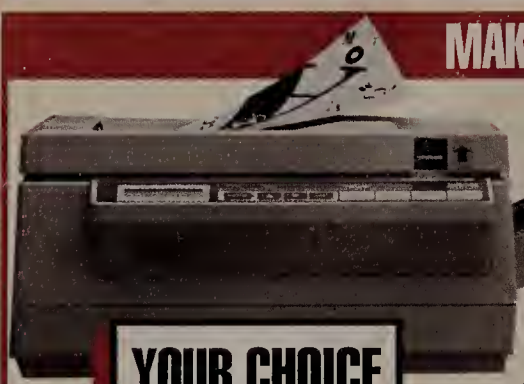
Se Habla Español

Our Commitment:
- Consistent low pricing
- Knowledgeable Sales Advisors
- Quality products and latest versions
- Over 2000 products in stock
- Open 24 hours: Order between 9pm to 7am EST and shipping is free in the USA
- Hassle-free ordering and $6 overnight delivery by Airborne Express

Now! You can place your PC Zone order on **CompuServe** Just Type: **Go MZ** Multiple Zones International

NOW! Our Canadian customers' orders, in most cases, delivered within 24 hours. By special arrangement with Canadian Customs all applicable duties and GST taxes will be charged when placing your order with the Zone. Your products can now be delivered hassle free through Customs without delay. Shipping charges as low as $16 (US) via Airborne Express. Call for complete information.

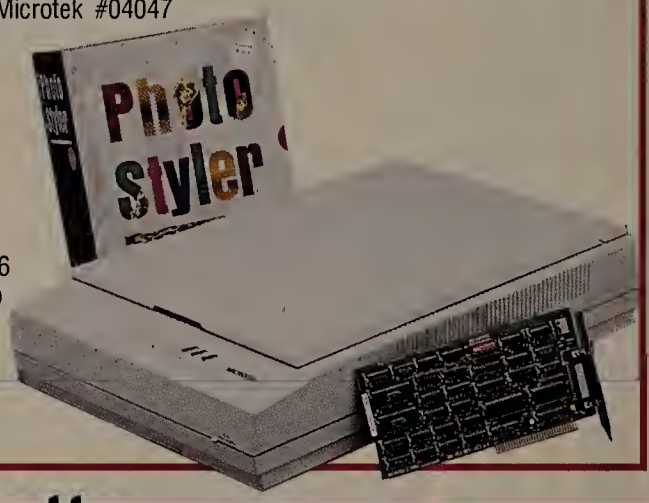
MAKE A LASTING IMPRESSION WITH MICROTEK



TrueLaser Printer

If you're in search of a laser printer that's fast, flexible and simple to use, you've just found it. TrueLaser is the first laser printer that's fully PostScript, TrueImage and PCL compatible. TrueLaser is also the first printer to come bundled with 35 resident TrueType fonts. Its combination of flexibility, superior speed and sensible price offer you an affordable way to make your published work look its best. Comes with the manufacturer's six month on-site warranty. Microtek #04047

YOUR CHOICE $1399



Scanmaker 600Z Color

The ScanMaker 600Z is capable of scanning 24-bit color and 256 shades of gray, the ScanMaker 600Z captures images with up to 600dpi resolution. It boasts outstanding color image quality and comes with a complete version of PhotoStyler, a sophisticated Windows 3.0 image editing and retouch program designed for artists and desktop publishers.
Microtek #09600

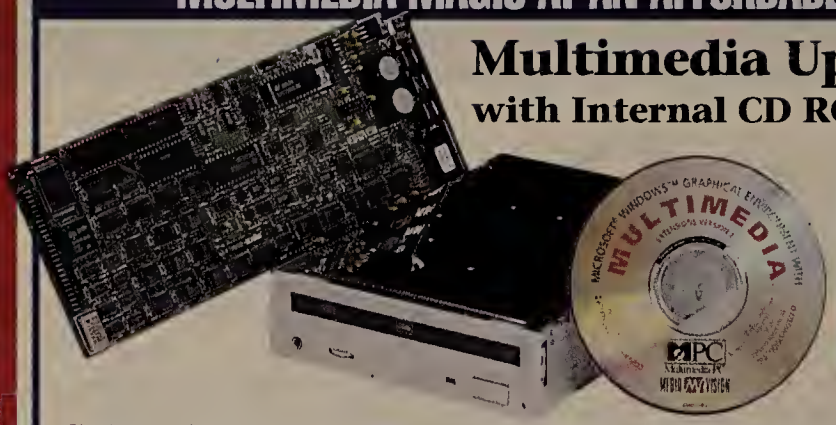
Maxell Diskettes

$17

Maxell's super reliable & durable disks set new standards for floppy disks. The MF2-HD, for example, incorporates 10 patent-pending innovations. It's improvements like these that have made Maxell disks some of the highest performing and most reliable disks available. Try them! PCZone is a full-line factory authorized dealer of Maxell products. Corporate, government and institutional buyers call our corporate sales staff for your quote today.
Maxell #09096

MC-2050 Data Cartridge #04970 ..... $16
MC-2120 Data Cartridge #04972 ..... $22
MC-6000 Data Cartridge #04974 ..... $23
MC-6150 Data Cartridge #04976 ..... $25

MULTIMEDIA MAGIC AT AN AFFORDABLE PRICE



Multimedia Upgrade Kit with Internal CD ROM

$728

Finally, an affordable, easy-to-use multimedia package! Media Vision's Multimedia Upgrade Kit for Windows includes Pro Audio Spectrum, a Sony CDU541 internal CD-ROM drive, MS Windows with Multimedia Extensions, *Compton's Multimedia Encyclopedia*, a 28Mb sample file and a Windows Program for mixing and recording. Media Visions #07101

More Windows 3.0

$65

More Windows is the essential Windows enhancement for owners of EGA and VGA display This one-of-a-kind utility includes 6 premium display drivers, bringing you turbocharged EGA and VGA performance. Artistosoft #09898

FREE SHIPPING ON ORDERS PLACED BETWEEN 9 & 7 E.T.

ACCESSORIES

Advanced Gravis
09064 Advanced Gravis Joystick - Blk 36
09065 Advanced Gravis Joystick - Clr 39

American Power
04574 Surge Arrest 17
04576 Surge Arrest Plus With Tel. 59
02464 UPS 110SE 208
00305 UPS 370CI 338

C Enterprises
9346 PC Modem Cable 6' 25Pin-25Pin 15

EFI Corporation
00281 Surge Protect EFI-453/ 15'Co 89

Farallon
00361 TE-167 RJ-11 Connector 10 Pk 8

Kensington
09521 Kensington Master Piece Plus 98
03495 Kensington Side Clip 6
03345 Power Backer 360 269
03346 Power Backer 450 337
03347 Power Backer 520 397
03339 Power Tree 10 19
03342 Power Tree 20 27
03343 Power Tree 50 54

Kraft
07136 Kraft Thunderstick 29

Monster Group, Inc.
09952 Persona PC Speakers 159

OnTrack
07110 5.25 inch Mounting Brackets 12

Panamax
09833 Max 6 Surge Suppressor/Cond 49
09834 Supermax Surge Suppres/Cond 69
09832 Telemax 4 Surge Suppres/Con 69

PLI
09907 PLI SCSI 16 Bit Card 58015 148

Powercard Supply
09429 Powercard Internal IPS Card 258

Tripp Lite
09720 Omnipower 450W Lan Backup 319

HARDWARE

ATI
07188 ATI 8514/Ultra W/1MG 55
09900 ATI VGA WnderExcelw/Mse 19

Canon
09735 BJ-10EX Bub Jet Printer Bk 32
07159 LBP 4Plus Laser Printer 99
07173 LBP-8Plus Laser Printer 159

Colorado
07311 Jumbo 120 TapeBackUp DJ10 22
09823 Jumbo 250 TapeBackUp DJ20 28

NEC
07632 CDR 38M XTAT Ext. 61
07633 CDR36M XTAT Port CD-ROM 47
07634 CDR73M XTAT Ext. CD-ROM 67

Star
07482 NX1001 9 Pin DotMatrix Prntr 15
07483 NX2420 24Pin Dot Matrix Prntr 32
07484 StarJet SJ-48 Ink Jet Printer 34

- All major credit cards accepted. No surcharge.
- Credit card is not charged until your order is shipped. If we must ship a partial orde freight is not charged on back order (USA only).
- Most personal and company checks received by mail will clear immediately. In orde be processed all checks or purchase orders must have a phone number and contac person listed.
- C.O.D. orders are accepted: Limit $1,000 per order. Cashier's check or money ord only. Add $5.00 per C.O.D. order.
- Educational, government and corporate purchase orders are accepted.
- All U.S. shipments insured at no extra charge.
- No sales tax, except for Washington State residents (add 8.2%).
- Prices and product availability subject to change without notice. All specials and promotions are limited to available stock. Please call for current prices.
- All products covered by 120 day limited warranty.
- Shipping is $6 per order for delivery in the USA. We ship via Airborne Express Overnight service. (Some rural areas require an extra day for delivery). We also shi UPS ground.
- Monitors are assessed an additional shipping charge. $25.00 for full page, $50.00 two-page. UPS Rates are also available upon request.
- Orders placed 9pm to 7am ET are shipped free in USA via Airborne Express.
- Orders placed by 9pm ET (6pm PT) weekdays for "In stock" items will ship that da overnight delivery (barring system failure, etc.).
- APO/FPO box orders are shipped first class U.S. Mail. Shipments to P.O. Boxes are UPS.
- We will not be held responsible for typographical errors.

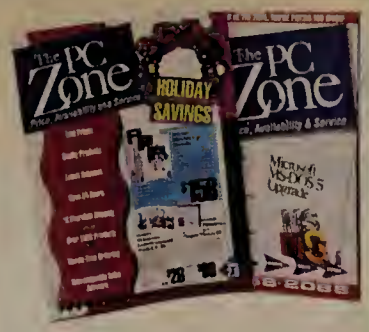
- **Defective software will be replaced immediately. Hardware will be repaired or replaced at our discretion.**
- **A Return Authorization Number must be obtained prior to returning any item. Ple call Customer Service Hotline, 1-800-248-9948, weekdays from 6am to 6pm PT 9am to 9pm ET.**

PC Zone 18005 NE 68th St, Suite A110 • Redmond, WA 98052-9904
International: 206-883-3088 • FAX: 206-881-3421

#20410

Call Now for your FREE Catalog

Over 2000 Products at the Prices You Want



OVERNIGHT SHIPPING • 1-800-252-0286 • $6 PER ORDER IN THE USA

Business Essentials

W = Windows Application

a Software
- Alpha Four 2.0 Comp. Upgr 94
- Alpha Four 2.0 348

netrix Corp.
- Instant Database Win ..... 48 W

and International
- OBase IV 1.1 479
- Paradox 3.5 519
- Paradox 3.5 Comp Upgr 148
- Paradox Lan Pk Single Ntwk 199
- Paradox SE 65
- Quattro Pro 4.0 328
- Quattro Pro 4.0 Comp Upgr 88
- Quattro Pro SE V1.0 46

Software
- Fox Pro 2.0 Single 458

klin
- Lang.Master OOS 201 44

Lotus
- 09557 Lotus Ami Pro 2.0 ..... 299 W
- 09723 Lotus Ami Pro 2.0 Comp Upgr ..... 99 W
- 09476 Lotus 123 Rel 2.3 335
- 09526 Lotus 123 Rel 3.1+ 428
- 09669 Lotus 123 Win ..... 399 W
- 09674 Lotus 123 Win.Comp Upgr ..... 89 W
- 09670 Lotus 123 Win.Tech Guarnt ..... 49 W
- 09724 Lotus Ooubie Up Upgrade ..... 158 W

Microsoft Corporation
- 09381 License Pak For Excel 3.0 ..... 269 W
- 08934 MS Excel 3.0 For Win ..... 298 W
- 07404 MS Word Win 2.0 Comp Upgr ..... 128 W
- 09974 MS Word for Win 2.0 ..... 309 W

Software Publishing
- 08518 Officewriter 6.2 234
- 08148 Professional Write 2.2 159
- 09370 Professional Write Plus ..... 168 W

Spinnaker
- 07077 PFS First Choice 3.1 85

Symantec
- 09392 Justwrite V1.0 For Win ..... 129 W
- 08919 Norton Editor 2.0 69

WordPerfect Corporation
- 09021 LetterPerfect 1.0 128
- 08172 WordPerfect 5.1 239
- 09217 WordPerfect 5.1 - 20 Pack 3300
- 09216 WordPerfect 5.1 - 5 Pack 1100
- 09349 WordPerfect 5.1 For Win ..... 279 W
- 07615 Wordperf.5.1 Add.Lic 20 pak 2948
- 07612 WordPerf.5.1 Add.Lic w/Ooc 208
- 07611 WordPerf.5.1 Add.Lic w/o Doc 174
- 09681 WordPerf.5.1 Trade Up 139
- 09388 WordPerf.5.1 Upgrade 77
- 07009 WordPerf./Win Comp Trdup ..... 128 W
- 07010 Wordperf./Wrdpft Win Trdup ..... 79 W

Graphics

be Systems
- Adobe Illustrator 4.0 ..... 422 W

s Corp.
- Persuasion 2.0/Win ..... 329 W
- Freehand 3.0 For Win ..... 388 W

netrix Corp.
- Make Your Point Win ..... 48 W

ner Blue Software
- Org Plus Adv. 6.0 64

l Systems
- Corel Draw 2.0 ..... 368 W

Computer
- Icon Designer 2.0 ..... 33 W

s Corp
- Freelance For Win ..... 348 W
- Freelance For Win Upgrade ..... 99 W
- Freelance Graphics 4.0 329
- Lotus Freelance 4 Comp Upgr 89

rografx
- Charisma For Win ..... 339 W
- Windows Draw ..... 109 W
- Designer 3.1 w/ATM 2.0&ATA ..... 459 W
- New Wave Charisma ..... 323 W
- Picture Publisher Plus Win ..... 489 W

rosoft Corporation
- Powerpoint for Win ..... 315 W
- Powerpoint for Win Comp Upgr ..... 119 W

ware Publishing
- Harvard Geographics 274
- Harvard Draw for Win ..... 398 W
- Harvard Graphics 3.0 399
- Harvard Graphics 3.0 Node 399

dPerfect Corp.
- DrawPerfect 1.1 268

Finance

soft
- Turbo Tax 1991 Final Ed 49
- Turbo Tax Win Final ..... 58 W
- Quicken/Turbo Tax Bndl DOS 69
- Quicken/Turbo Tax Bndl Win ..... 69 W

puter Associates
- ACCPAC Acctg. for DOS 3.4 129
- ACCPAC BPI Acct.Payable 232
- ACCPAC BPI Acct.Receivable 234
- ACCPAC BPI General Acct.3.0 234
- ACCPAC Simply Acctg.Win ..... 139 W

Software
- OAC Easy Accounting 4.2 83
- OAC Easy Bonus Pack 4.2 148
- DAC Easy Light 1.0 42

at American Software
- One Write Acct Works + P/R 184
- Onewrite+Acc. Systems 2.06 114
- Onewrite+ Payroll 2.06 64

it
- Quick Pay 2.0 38
- Quicken 5.0 44
- Quicken For Win ..... 46 W

SA
- Pacioli 2000 28

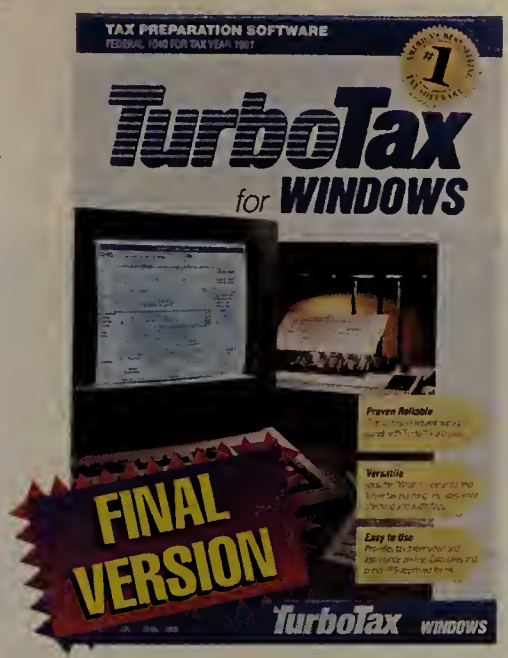
a Ventures
- Andrew Tobias Taxcut 1040 48
- Andrew Tobias Taxcut EZ/A 49
- Checkwrite Plus 1.1 30
- Managing Your Money 8.0 129

rosoft Corporation
- MS Money For Win ..... 48 W

Infinity Software
- Winvoice ..... 169 W

chtree Software
- Crystal Accounting 189

ware Incorporated
- MYOB For Win ..... 138 W

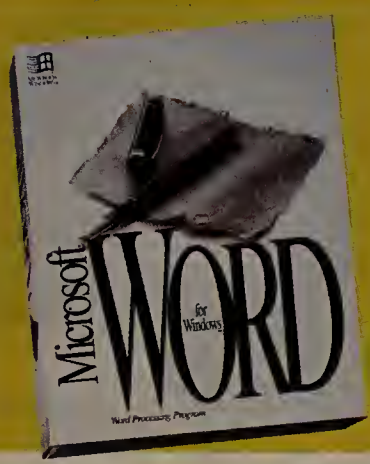


Turbo Tax for Windows

$58

TurboTax for Windows is America's best-selling PC tax preparation software. It quickly and easily guides you to the forms you need, walks you through the tax preparation process, and prints out your return ready to mail to Uncle Sam. Chipsoft #07228

Turbo Tax for DOS #07129 ..... $49
Turbo Tax/Quicken Bundle for DOS #07179 ..... $69
Turbo Tax/Quicken Bundle for Windows #07180 .. $69



Microsoft Word for Windows 2.0

$128

COMPETITIVE •UPGRADE•

Power up to Word 2.0 for Windows, the leading word processor designed for Windows. It makes everyday work easy. Tables, bullets, charts, columns and drawings—they're all just a click of the mouse away! You can create envelopes or check your spelling with a mouse click, too. Requires proof ownership of qualified word processing software.
Microsoft #07404

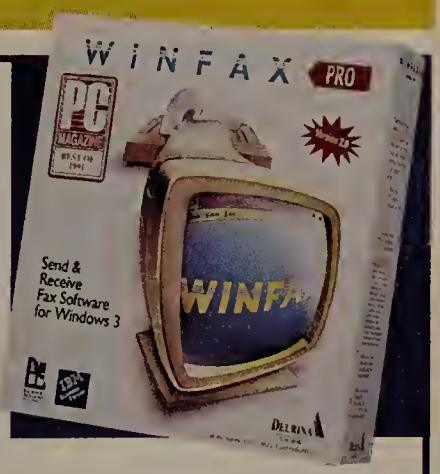
Microsoft Word for Windows 2.0 #09974 ..... $309

ASK FOR A FREE

▶ Interactive Demo Disk of Nighthawk F117A Stealth Fighter 2.0 with any Purchase. While Supplies Last

WinFax Pro 2.0

$74



With WinFax Pro you can fax documents (and receive faxes) directly from your computer, just click on the item you wish to send. WinFax even lets you create "fax merge" documents in much the same way you mail merge with a word processor. Delrina #09577

Quattro Pro 4.0

$88

COMPETITIVE •TRADE-UP•

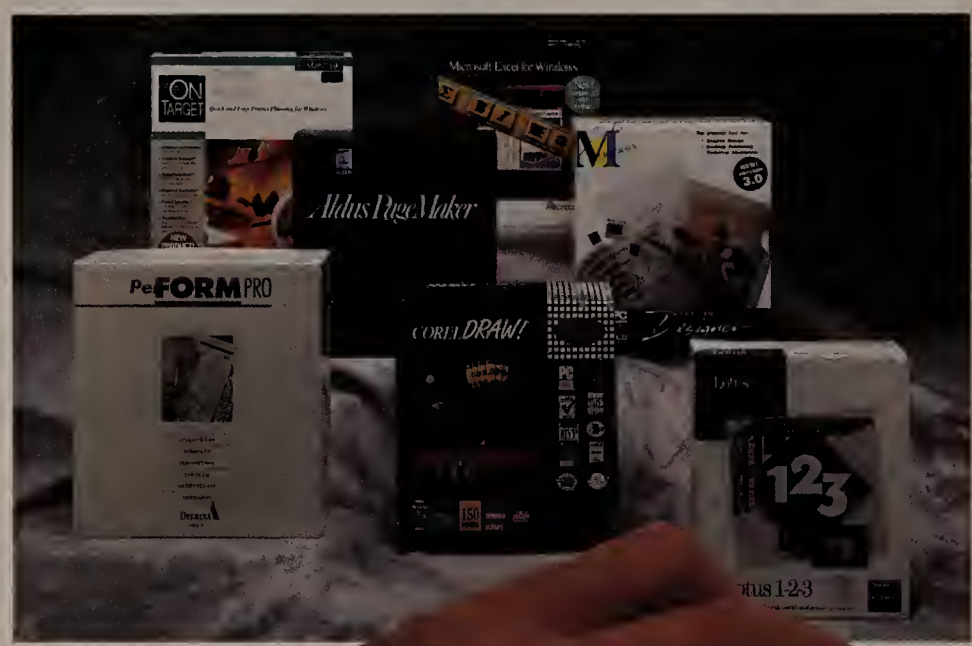
Quattro Pro 4.0 is one of the most effective DOS spreadsheets available. It combines built-in push button power with a revolutionary new intelligent graphing system. Completely compatible with Lotus 1-2-3 files. Requires proof of ownership of qualified spreadsheet software. Borland #07646

Quattro Pro 4.0 #07644 ..... $328

Communicate With Any Fax Machine!

Fax Directly From Any Windows Application.

With WinFax PRO it's incredibly simple! A few mouse clicks and you can fax even your most complex documents. WinFax PRO eliminates the need to print hard copy. And the trot down the hall to the fax machine!



scanning system that fax machines use. Which means that tiny type is crisp and really readable. Fine lines look fine. And graphics are truly graphic. Full WYSIWYG support means what you see on your screen is *precisely* what prints on the fax machine you send to, with unbelievable 200x200 dpi quality.

Want to see for yourself? Just call (716) 832-3676 and we'll fax you a real life sample.

This Easy.

Anything you can print within Windows, you can fax. Right from your PC!

No need to quit the Windows application you're in. WinFax PRO enables you to easily combine data from *any* application into a single outgoing fax. Text from your word processor, numbers from your spreadsheet, graphics from your paint program — and forms from PerForm PRO.

CALL YOUR LOCAL DEALER TODAY OR FOR ORDERING INFORMATION CALL
1-800-268-6082
60-DAY NO HASSLE GUARANTEE

Receive Fax Messages on Your PC Too.

WinFax PRO allows you to decide how you receive your fax messages. Totally in the background, immediately on your screen, or directly to your printer.

The Affordable Fax Solution.

WinFax PRO works with most popular fax boards, including all Class 2 fax modems, Intel's SatisFAXtion and other CAS-compatibles, as well as Sendfax modems. And the list price is only $119, although your dealer may sell for even less.

Laser Quality Output — Even From a Regular Fax Machine.

Output sent by WinFax PRO is amazing! WinFax PRO eliminates the crude

WinFax PRO
Fax Software for Windows

DELRINA
Software For Improved Office Performance

Attention FAXit users. Upgrade to WinFax PRO at a special discount rate. Call for information.

WinFax PRO and PerForm PRO © 1991 Delrina Technology Inc. All rights reserve
All product names mentioned are trademarks of their respective owne

Circle 61 on reader service card

SPREADSHEETS (A..Z)

Practical tips for building better worksheets

by Richard Scoville

These days, having the right information is only half the battle—you have to make it look good, too. This month we'll show you how to pick fonts with Wysiwyg, the graphics-based formatting add-in that comes bundled with all current versions of *1-2-3*.

In a *Windows* spreadsheet such as *Excel*, using fonts is straightforward. Once installed, they're available for all your *Windows* applications. But for *1-2-3* release 2.3 or 3.1, which operate without *Windows* support, working with fonts is a bit more involved.

1-2-3 comes with three typefaces licensed from Bitstream, a leading font maker—Swiss, Dutch, and Courier—plus a Symbol face that uses graphics symbols instead of regular characters (see row 17 in **FIGURE 1**). *1-2-3*'s installation program generates fonts from these typefaces in selected sizes and stores them on your hard disk. These fonts cannot be resized from inside *1-2-3*.

Fonts of Wisdom

Let's explore the basic font procedures by building a test worksheet like the one shown in **FIGURE 1**. In *1-2-3* release 2.3, first make sure the Wysiwyg add-in is attached: Select */Add-In•Attach* (in *3.1*, press **<Alt>-<F10>** and select *Load*) and choose *WYSIWYG.ADN*. If Wysiwyg is already attached, you'll get a message to that effect. If not, select *No-Key*, then *Quit*. In the commands below, you'll press colon (:) to activate the Wysiwyg menus.

Now choose your printer. For each new worksheet, select *:Print•Config•Printer* and pick your printer from the list. Then choose *1st Cart* or *2nd Cart* and select a font cartridge, if you have one. Select *Quit•Quit* to return to your worksheet.

Now you're ready to define a font palette, eight fonts identified by number. For instance, the default for font number 2 is 'Swiss 14'. When you format a range with font 2, its contents appear in 14-point Swiss; if you assign a different font to number 2, the range will assume the new appearance. Unformatted cells are printed in font 1, 10-point Swiss, by default. This is an easy-to-read choice for your main font, although if you have a lot of information to fit on one page, you might want to consider something smaller.

To include a font in the palette, select *:Format•Font•Replace*, and pick the font number. Then choose a typeface. The first three menu options are *1-2-3*'s Bitstream soft fonts, or you can select *Other* and choose one of your printer-resident or cartridge typefaces. Typefaces for all printers are listed, so make sure you choose one you can print.

Finally, enter the point size. If the typeface you select is scalable (and your printer can scale it), your text will be printed in the size you specify. Otherwise, *1-2-3* and Wysiwyg will substitute the closest available size.

Once you've defined your font palette, you can use it to format the worksheet.

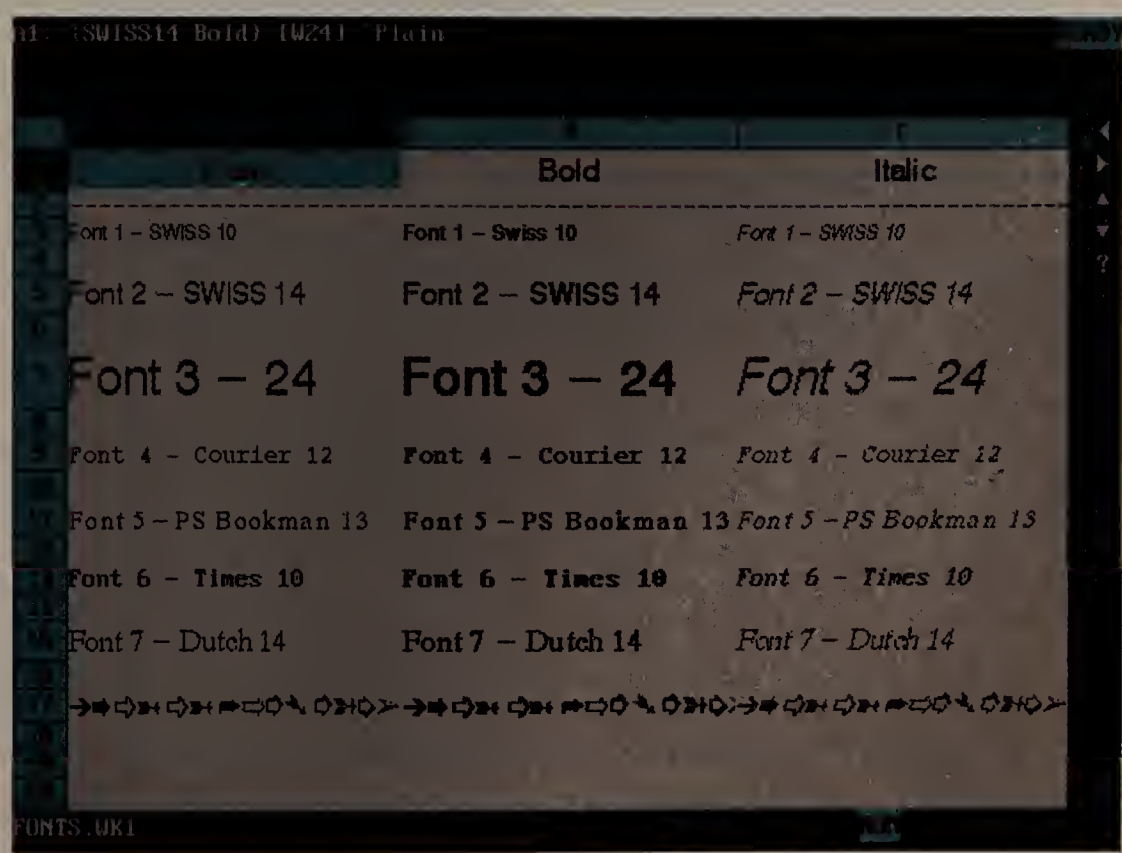


FIGURE 1: When you turn on 1-2-3's bundled add-in, Wysiwyg, you can select, view, and print a wide variety of fonts that can make your worksheet stand out.

Excel Shortcut

Painless Formula Auditing

by Ralph Soucie

Tracking down erroneous cell references doesn't have to be hard work. If you're concerned about a particular formula, simply select the cell containing that formula, then press <Ctrl>-[.

Excel will then identify all *direct precedents*—cells whose addresses appear in your formula. Naturally, these precedents might refer to other cells *indirectly* referenced by the original formula. To display both direct and indirect precedents, press <Ctrl>-<Shift>-[.

To isolate *dependent* cells (cells whose results depend on the current cell), press <Ctrl>-] or <Ctrl>-<Shift>-]. Once *Excel* has highlighted the cells, you can press <Tab> and look at the formulas in the formula bar. Or you can simply display the formulas in the worksheet itself by pressing <Ctrl>-` (that's the backslanting apostrophe on the same key as the tilde [~]); press <Ctrl>-` to redisplay values.

To perform these operations through the menu, choose *Formula•Select•Special* and select the desired option from the dialog box.

For example, to assign font number 2 to the range A5..C5, as shown in **FIGURE 1**, select *:Format•Font•2*, paint the range A5..C5, and press <Enter>. You can combine attributes such as bold and italics with any font. To bold the text in column B, select *:Format•Bold•Set*, highlight the range B3..B17, and press <Enter>.

It's Easier Next Time

Luckily you don't have to define a new font palette for each worksheet—there are three ways to reuse an old palette. If you want to make the current font palette the default for all future spreadsheets, select *:Format•Font• Default•Update.* If you'd like to create several different palettes to use with different types of documents, you can store the current palette on disk and retrieve it later. Use *:Format•Font•Library•Save* and enter a file name. To reuse the palette later, select *:Format•Font•Library•Retrieve* and a library file, or simply appropriate the font palette from another worksheet: Select *:Special•Import•Fonts* and the previous worksheet's FMT file (where its Wysiwyg formatting information is stored).

Fonts are fun, and *1-2-3*'s font system is not so perplexing once you get the hang of it.

Questionable Spreadsheets Department

Q. *Help! I'm trying to analyze our company's long-distance phone records by day of the week. I have a 1-2-3 spreadsheet that shows the date (a label) when each call was made, and I need a bar graph that shows the number of calls made on Monday, Tuesday, and so on. I've tried data tables, but I can't seem to make them work.*

Marla Cox
Dearborn,
Michigan

A. You're in luck. The Data Distribution command is designed to perform frequency analyses just like yours. The example in **FIGURE 2** illustrates the solution. In column A, enter a list of dates in the form of labels. For instance, the entry in A3 is **'04/26/91**.

Column B contains a series of code numbers that indicate the day of the week. **@MOD(@DATEVALUE(A3),7)** is the formula in B3. The @DATEVALUE() function converts the label in A3 into a date code number expressed as the number of days that have elapsed since the beginning of 1900. For instance, the date value for April 1, 1992, is 33695. The @MOD() function yields the remainder when one number is divided by another. In this case, we divide the date value by 7, the number of days in a week. When the formula returns zero, the date is a Saturday.

As an example of how you can use this day-of-the-week code, check out the formulas in column C. Cell C3 contains the formula **@CHOOSE(B3,"Sat", "Sun","Mon","Tue","Wed","Thu","Fri")**. @CHOOSE() uses the value of its first argument to select an item from a list made up of its remaining arguments, where the first item is number zero. In this case, when the day-of-the-week code in B3 is zero, the @CHOOSE() function selects 'Sat'; when it's 1, the formula yields 'Sun', and so on.

The table at E3..F9 shows the number of calls made on each particular day of the week. Enter the days of the week as labels in column E and as numbers in

	A	B	C	D	E	F	G
1							Calls
2	Date		DOW				per day
3	04/26/91	6	Fri		Sat	0	2
4	04/26/91	6	Fri		Sun	1	2
5	04/28/91	1	Sun		Mon	2	0
6	04/05/91	6	Fri		Tue	3	1
7	04/29/91	2	Mon		Wed	4	0
8	04/08/91	2	Mon		Thu	5	2
9	04/06/91	0	Sat		Fri	6	2
10	04/03/91	4	Wed				
11	04/01/91	2	Mon				

FIGURE 2: This worksheet uses the Data Distribution command to tell you how many phone calls you've received each day of the week.

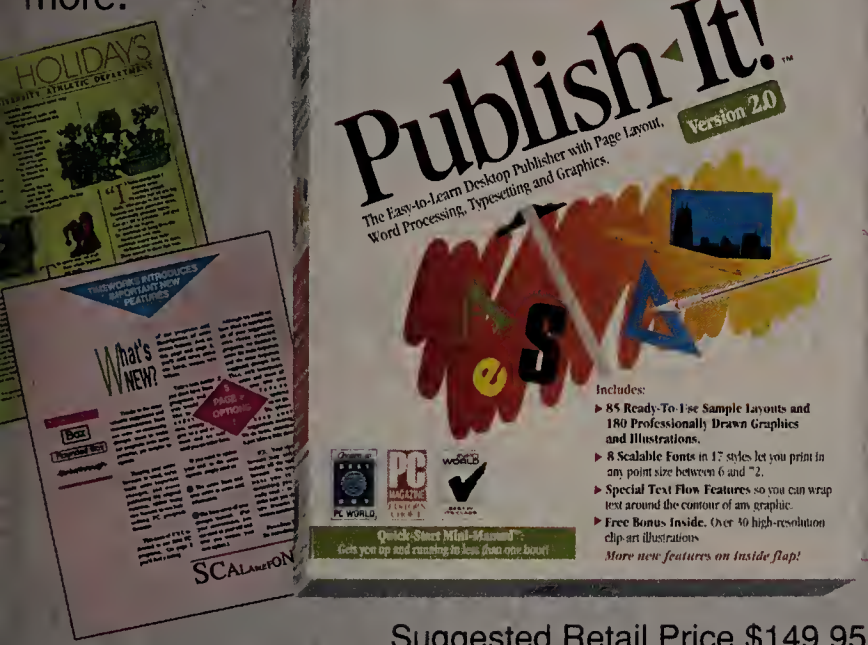
Publish◂It!™ Explodes the Myth

Myth: You Have to Spend a Lot to get a Lot in a Desktop Publisher.

Reality: Publish◂It™ has All the Power at One-Third the Price!

Whoever said you get what you pay for never used Publish◂It!. Because with Publish◂It! you get a lot more.

NEW VERSION 2.0



Suggested Retail Price $149.95

For those of you without an art degree, you need an affordable desktop publisher that's easy to use, a snap to learn and combines all the tools needed to create dynamic documents. In other words, you need Publish◂It!

Publish◂It! Version 2.0

The **Affordable** Desktop Publisher That Packs A Powerful Punch

With Publish◂It! everything is included:

- ▸ Easy Page Layout
- ▸ A Built-in Word Processor
- ▸ A Built-in Graphic Toolbox
- ▸ 85 Sample Layouts
- ▸ 180 Graphics & Illustrations
- ▸ A Quick-Start Mini-Manual
- ▸ **NEW** 8 Scalable Fonts in 17 Type Styles
- ▸ **NEW** Special Text Flow Features - *Wrap text around the contour of any graphic*
- ▸ **NEW** Extended and Expanded Memory Support

FREE BONUS
Over 30 High-Resolution Clip-Art Illustrations Included Free in Publish◂It!

Chosen as BEST BUY PC WORLD

PC MAGAZINE EDITOR'S CHOICE

INFO WORLD BEST IN ITS CLASS

Visit your favorite Dealer and find out why more people are making the switch to Publish◂It!.

TIMEWORKS®

OWN PUBLISH IT! FOR ONLY $69 AND SAVE OVER 50%

If you already own a desktop publisher add Publish It! for only $69. Just bring this ad with a copy of the title page from your DTP manual to your favorite dealer. If not available, send us the title page and coupon with a check for $69 plus $7.70 postage & handling to:

Timeworks, 625 Academy Drive, Northbrook, IL 60062
Or call: 1 (800) 323-7744
(Ask for Operator 95)
Fax: 1 (708) 559-1360

☐ Visa ☐ MasterCard ☐ American Express
Acct# Exp. Date

Offer Expires 6/1/92

Please print:

Name

Address Apt.

City State Zip

Signature

column F. Then you're ready to use the Data Distribution command, which counts the number of values in a range that are less than or equal to each value in another range. To apply it in this instance, select */Data Distribution*, B3..B11 as the values range, and F3..F9 as the bin range.

To represent the results in the form of a bar chart, use the labels in column E as the X values and column G as the A data range.

Send your spreadsheet questions to Richard Scoville, PC World Online; CompuServe 72341,2727; MCI Mail 357-4517; 415/442-1891 (fax); or mail them to Spreadsheets (A..Z), PC World, *501 Second St. #600, San Francisco, CA 94107.* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

Richard Scoville and Ralph Soucie are contributing editors for PC World.

Spreadsheet Toolbox

Slimming Down Your Worksheets

Sloppy spreadsheets—full of formatted but empty cells, undefined range names, and verbose macro commands—waste precious disk space and memory, and the bigger they are, the more you have to gain from cleaning them up. *Worksheet Optimizer*, a stand-alone utility program from Baler Software, can make the chore almost effortless.

WorkSheet Optimizer abbreviates macro keywords—for example, changing all {DOWN} commands to {D}—trims plus signs and other excess characters from formulas, and looks for ways to create simpler formulas that consume less space. It removes formatted or unprotected yet empty cells, erases cells containing a null label (that is, a label prefix with no text), and eliminates undefined range names (the ones that display ERR when you select */Range•Name•Table*).

WorkSheet Optimizer shrunk my worksheets by 10 percent on average. It's a specialized but uniquely useful spreadsheet gadget.

WorkSheet Optimizer $99.95; Baler Software Corp., 1400 Hicks Rd., Rolling Meadows, IL 60008; 800/327-6108
Reader service no. 636

GREAT THINGS COME IN SMALL PACKAGES

This powerful print server can tackle your biggest network printing problems

- Connects any parallel printer directly to your Ethernet LAN
- Fully Novell Netware 286 and 386 compatible
- Can attach to 8 file servers simultaneously
- Fast and easy to install
- Combines high-speed printing and exceptional printer control
- Supports encrypted passwords, forms, notify, cancel, and others
- Full one-year warranty and unlimited free technical support
- Made in the U.S.A.

Make the Rose Connection

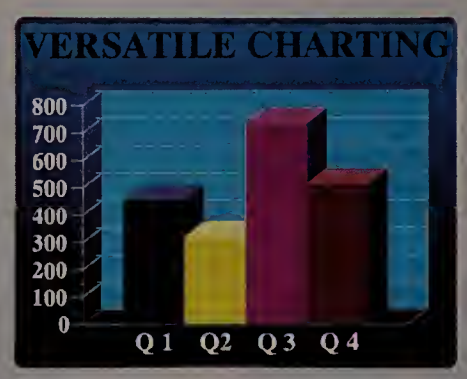
ROSE ELECTRONIC

10850 Wilcrest Drive • Houston, Texas 77099 • Phone (713) 933-7673 • Fax (713) 933-0044 1-800-333-934

Circle 239 on reader service card

It could only happen in Hollywood.

Special effects like gradient-filled text and text on a curve give your words a whole new spin.



You also get direct links to spreadsheet files for automatic updating.

"Our Best Buy," raves *PC World*. "A knockout package," applauds *InfoWorld*. "A stunning cast of features," cheers *PC Computing*. Among the press, Claris® Hollywood™ for Windows has definitely gotten the four-star treatment.

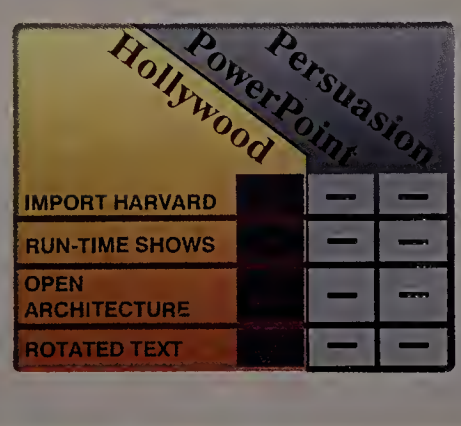
And the reason is simple: Nobody puts on a better show. With Hollywood's editing and outlining features, your script comes alive. Numbers jump off the screen, too, because our Chart Gallery lets you choose from a complete inventory of designs.

"★★★★" Best Buy—PC World

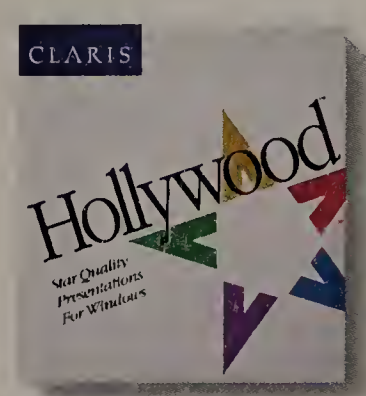
What all this means is Hollywood not only captures an audience's attention, it has all the tools necessary to capture your particular message. In output so superior, you'll shine.

So pack up your old program. See your Claris dealer. Or call us to trade up. Because if you want the best material for your next presentation, it can only happen in Hollywood.

You'll produce higher caliber bullets with our integrated outliner.



We win in so many categories we're off the chart—even black-and-white charts because Hollywood can colorize them automatically.

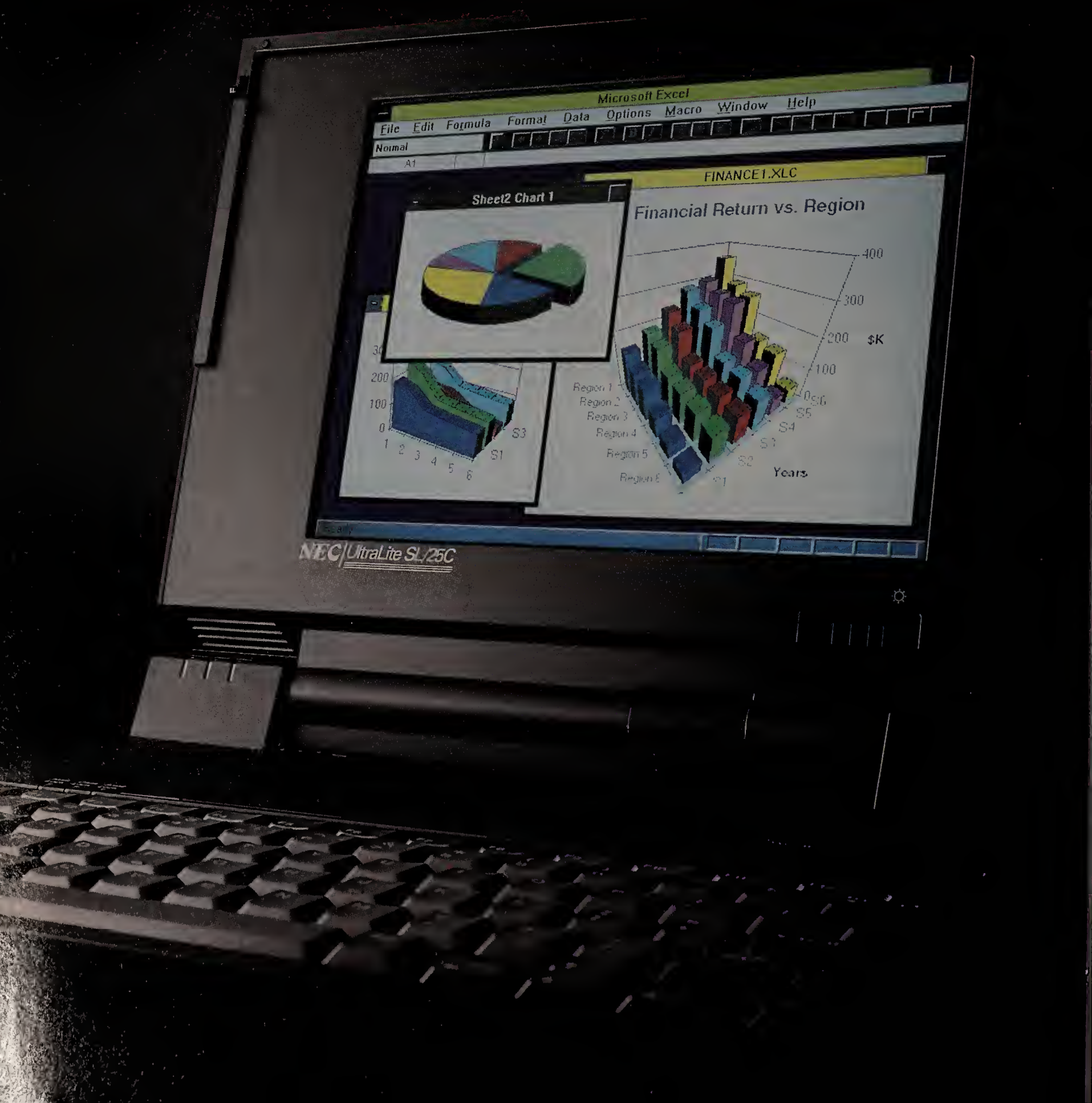


CLARIS

Simply powerful software.™

© 1992, Claris Corporation. All rights reserved. Claris is a registered trademark and Hollywood is a trademark of Claris Corp. Other product names are trademarks or registered trademarks of their respective holders. Offer good only in USA to registered owners of Harvard Graphics, Persuasion, Freelance, PowerPoint for Windows; requires proof of purchase; expires 12/31/92.

Introducing the be
notebook co



st color display in a mputer. Ever.

In its review of our UltraLite® SL/25C notebook, *PC Magazine* said, "NEC is about to make the future of portable computing a whole lot brighter."

We couldn't agree more.

The best color display in a notebook. Ever.

The fact is, NEC is the first to offer an active-matrix TFT color screen in a notebook, and yet, in the words of *PC Magazine*, "its price tag rivals lower-quality passive-matrix offerings."

What's the difference between active-matrix and passive-matrix color screens? One looks vivid, sharp and bright, like your desktop monitor. The other doesn't. One can be viewed from wide angles. The other can't. One is clearly the future of notebook computing. The other isn't.

The best processing technology in a notebook. Ever.

To quote *PC Magazine* once more, our SL/25C "has more going for it than just spectacular color. It's also one of the first notebooks to use Intel's new 25-MHz 386SL chip set."

The new chip provides all the processing punch of a 386 desktop PC. Offers intelligent power management for longer battery life. And runs even the most complex applications at blazing speed. The 7.5 lb. SL/25C comes standard with 2MB of RAM (expandable to 10MB), an 80MB hard disk, internal floppy and 64KB cache. As well as MS-DOS® 5.0 and Windows™ 3.0, loaded and ready to run.

Just what exactly is active-matrix TFT display anyhow?

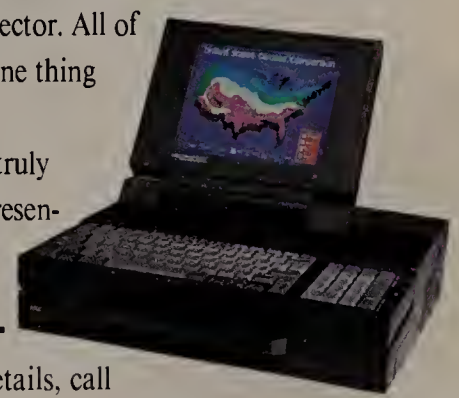
Active matrix TFT (thin-film transistor) display means that for each pixel on the screen, there is a tiny transistor. In the case of the SL/25C, that adds up to over 900,000 transistors covering the entire screen, forming the image. With each pixel controlled by its own transistor, the image is always in sharp focus, and far brighter than other screen designs permit. NEC has long been a world leader in display technology. And the SL/25C is one example of this.

It does everything a powerful desktop does. Except chain you to a desk.

There's a serial port, SuperVGA CRT port, PS/2® mouse port and optional internal modem. An enhanced parallel port allowing improved throughput for network connections. And an optional full-function, portable Docking Station™ unit—with two expansion slots and a 3.5″ drive bay—that not only turns the SL/25C into a desktop you can take anywhere, it also gives you other options, like fully integrating sound and image to create your very own portable multimedia platform.

A powerful argument for color, right here in black and white.

It also has a brilliant VGA display. A palette of over 225,000 colors. A fast screen refresh rate (so you never lose your cursor). And a "simultaneous video" feature—so the image you see on your screen can also be viewed on an external video device, like a big-screen projector. All of which makes one thing perfectly clear: the SL/25C is truly the ultimate presentation tool.



Shown with optional Docking Station.

Call today.

For more details, call 1-800-NEC-INFO. Or call NEC FastFacts at 1-800-366-0476, #ULSL25C (8575252). In Canada, call 1-800-343-4418.

We'll give you enough information about the SL/25C to make you not want to be without it. Ever.

C&C
Computers and Communications

Because ⬆ is the way you want to go. NEC

Circle 205 on reader service card

"The Best Memory Manager"

It's an easy claim to make, but we have the facts to back it up:

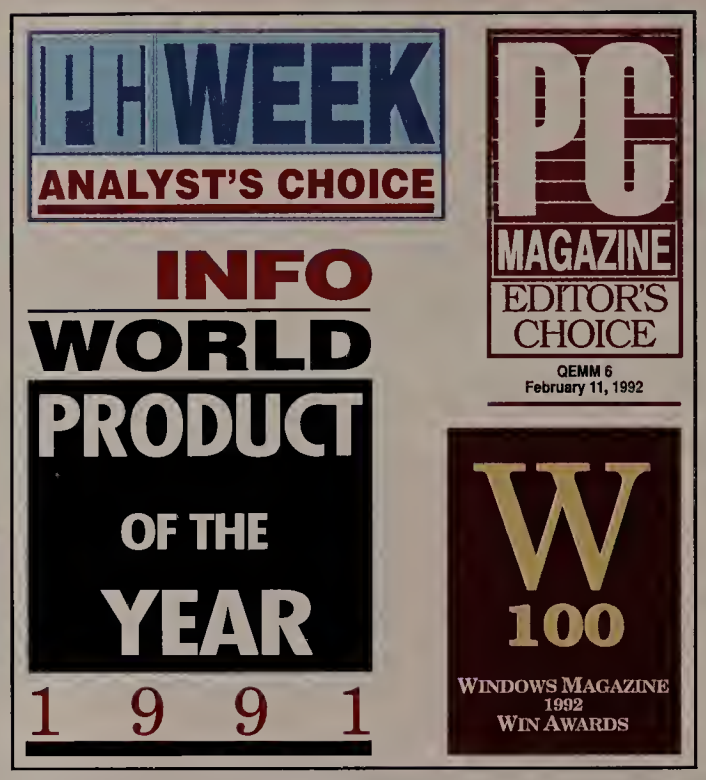
Our new QEMM-386 version 6 is the best way to get the most out of memory. It 'pools' all your memory so that it's available in whatever form your programs need—expanded or extended. You don't even need to know the difference.

QEMM does it all for you. Instantly. Whereas DOS 5, for example, requires you to figure out what you need, then manually allocate memory and re-boot every time you need to change.

> "It's nothing less than a dream come true"
> —*Steve Gibson InfoWorld 8/26/91*

As for the all-important 'conventional' memory area, our new version 6 increases the amount of memory freed-up. Our exclusive 'optimize' feature automatically seeks out TSRs and device drivers and moves them into high memory—the area between 640K and 1 megabyte. All you need do is type 'OPTIMIZE'.

QEMM-386 v6 finds more high memory than any other memory manager. *Byte Magazine's* tests showed it produced net memory gains of 21K to 132K over DOS 5.0 alone, for instance.



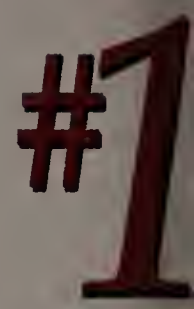
Our latest awards.

Stealth takes you to network and TSR heaven.

Our breakthrough 'Stealth' technology makes available areas normally taken up by ROM. Areas that QEMM-386 can use to load memory-hogging drivers and TSRs. Big programs can get the memory they need to run fast and efficiently. And you get to have your TSRs.

Not every PC can benefit from Stealth. But every PC can benefit from *'Squeeze'*—our new feature to accommodate those TSRs that need more memory at start up and less when they're resident. Memory allocation is temporarily increased, then squeezed down after it's needed.

QEMM can use idle video memory to produce a further 96K gain on EGA and VGA systems when running character-based programs.



QEMM is the number one selling PC utility.

A priceless $60 bonus.

QEMM comes with Quarterdeck Manifest, the award-winning analysis program that makes it easy to see what's going on 'under the hood' of your PC.

See and understand how your PC works with Manifest.

Manifest does for memory what PC Tools Deluxe does for disks.

Big Benefits for Windows users, too.

Whether you're running DOS 3, 4, 5, or Windows, QEMM can improve your 386/486's performance.

That means you may not need a faster CPU. You may not even need more RAM. QEMM makes your favorite programs work better by giving them more memory.

QEMM helps you get the most out of the software you own today.

Quarterdeck Office Systems, 150 Pico Boulevard, Santa Monica, CA 90405 (310) 392-9851 Fax (310) 314-421
Quarterdeck International Ltd., B.I.M. House, Crofton Terrace, Dun Laoghaire, Co. Dublin, Ireland Tel. (353) (1) 288-1444 Fax: (353) (1) 284-438

©1992 Quarterdeck Office Systems. PC Week Analyst's Choice Logo, ©1991, Ziff Communications Company. PC Week is a registered trademark and the PC Week Analyst's choice logo is a trademark of the Ziff-Davis Publishing Company. Other trademarks are property of their respective owner

WORD PROCESSING CLINIC

Tips for getting the most out of your word processor

by George Campbell

Q. *I switch between three word processors at different times,* WordPerfect 5.1, Word 5.0, *and* WordStar 6.0. *I sometimes need to edit my AUTOEXEC.BAT or other ASCII files. Is there a way I can use these programs to edit files from the DOS command line, while maintaining ASCII formatting?*

N. Maida
San Francisco

A. Sure. Loading and saving ASCII files is easy in all the programs you mention.

For *WordPerfect 5.1,* change to your *WordPerfect* directory and use a DOS command like **WP C:\AUTOEXEC.BAT**. To save the edited file in ASCII format, press **<Ctrl>-<F5>AG**, type the path and file name, then press **<Enter>**.

In *Word 5.0,* use **WORD C:\AUTOEXEC.BAT** to edit files. To save, press **<Esc>TS**. Make sure you selected *Text-only*, then press **<Enter>**.

The command format in *WordStar 6.0* is **WS C:\AUTOEXEC.BAT /N**. The **/N** opens the file in nondocument mode. Since you opened your file in this mode, normal *WordStar* commands (**<Ctrl>-KS** or *File•Save*) will save the file.

Q. *I'm stuck with some old* WordStar 3.3 *files that I want to convert into* WordPerfect 5.0. *I tried retrieving them but got gibberish on my monitor. Any suggestions?*

Douglas Nuetzman
Closter, New Jersey

A. You're in luck! *WordPerfect 5.x* includes a file conversion utility, CONVERT.EXE. If it's not in your *WordPerfect* directory, add it with *WordPerfect*'s INSTALL.EXE program.

To convert the file, change to your *WordPerfect* directory, type **CONVERT** at the DOS prompt, and press **<Enter>**. At the prompt, type the path and file name of your *WordStar* file, press **<Enter>**, and then type a name for the output file and press **<Enter>**. You'll see a menu. Type the number for the *WordStar 3.3 to WordPerfect* conversion and press **<Enter>**. However, if you should ever want to convert from *WordStar 6.0* or other versions, you'll need to use a third-party conversion program such as Mastersoft's *Word for Word.*

Q. *When I use* Microsoft Word 5.0, *my text sometimes extends off the screen. Is there a way to fix this annoying problem?*

Alan North
Providence

A. The problem is that *Word*'s default settings are set to display line endings as they will print, rather than fit them on screen. When you choose a small or proportional font or wide margins, there are too many characters per line, and the characters at the end of a line are forced off the screen. Fortunately, there's a simple solution.

To force *Word 5.0* to display all text on the screen, press **<Esc>O**, move the

You can use your word processor as an ASCII text editor. Once you've edited your ASCII file, just save it without formatting, as shown here in Word 5.5.

cursor to the Show Line Breaks: field, then press N<Enter>. From now on, this setting will be the default when you start *Word*. To show line breaks in *Word 5.5*, press <Alt>-VE<Alt>-L<Enter>, or click the View menu command, drag to the Preference command, and click the Line Breaks check box. Then click on *OK*, and you're set.

Q. *When I write to Europeans in their native languages, I need to use special characters. How can I get these characters in* WordPerfect 5.1?

George S. Janis
Akron

A. Use *WordPerfect*'s Compose feature. Open your *WordPerfect* manual to Appendix P and find the chart titled "Character Set 1 (Multinational 1)."

To insert a foreign character, press <Ctrl>-V. At the Key prompt, type the number of the character set (in this case, 1), a comma, and the number of the desired character from the chart, and press <Enter>. For example, to insert an *Ö*, type <Ctrl>-V1,62<Enter>. If you often use the same character, consider recording your keystrokes as a macro.

Q. *I want to make changes in my* WordPerfect 5.1 *macros. Can you tell me how to edit them?*

Sharon Collins
Newbury Park, California

A. First press <Ctrl>-<F10>, type the name of an *existing* macro, then press <Enter>E to access the macro editing screen. Use the cursor keys to move to the part of the macro you want to edit. Macro commands are surrounded by curly brackets ({ }); normal keystrokes appear as regular characters.

To change a command, position the cursor on the command, then press <Delete> to remove it. Insert keyboard commands by pressing the command keys (for example, press <Shift>-<F7> to insert a {Print} command). To edit normal characters, use regular editing tools. To see a list of macro language commands, press <Ctrl>-<Page Up>. Pick a command with your cursor, then press <Enter>. When finished, press <F7> to save the macro or <F1>Y to abort your changes.

Send your word processing questions to George Campbell, PC World Online, Word Processing Clinic; CompuServe 71571,222; MCI Mail GCAMPBELL; 415/442-1891 (fax); or mail them to Word Processing Clinic, PC World, *501 Second St. #600, San Francisco, CA 94107.* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

George Campbell is a contributing editor for PC World.

Our Printer-based Faxing Solution is

Simple. Boardless. Networkable. Plain Paper. ...and does Windows too.

The JetFax II is a laser-fax interface that delivers faxes on your laser printer, and includes PC fax software for hassle-free PC faxing.

Plain Paper Quality
JetFax receives faxes onto HP and compatible laser printers on plain bond paper. Fast. You will never have to copy faxes onto plain paper again.

Boardless PC Faxing
JetFax II comes with software that provides sophisticated PC faxing capabilities without the headaches of internal boards. It connects easily between your laser printer and PC or file server, and performs faxing functions with minimal impact to your PC applications. And gives you scalable laser fonts.

Simple Network Faxing
JetFax II supports network faxing too, offering an easy-to-implement, inexpensive alternative to a dedicated fax server.

AND NOW: Easy Windows Faxing
In addition to our DOS based software, we'll include the new JetFax/Windows software at no extra charge, providing easy Windows faxing. Anything you can print in Windows, you can fax...even in a network.

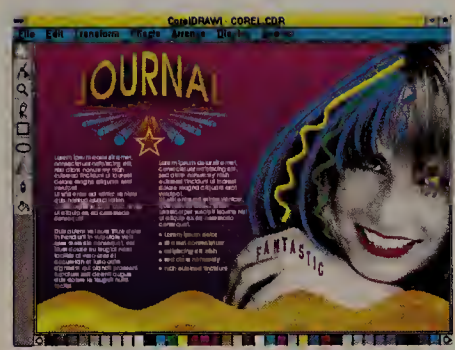
JetFax II® 1-800-7JETFAX

JetFax, Inc. • 978 Hamilton Court • Menlo Park, CA 94025 • (415) 324 0600 • Fax (415) 326-6003

Circle 118 on reader service card

DO IT ALL WITH CORELDRAW!

"It's so easy to add flair!"



DO IT ▶ *Desktop Publishing!*

Your newsletter and ad are due today and to make them look great you need CorelDRAW! With 153 fonts, plus thousands of clipart images and symbols, creating dynamic headlines, diagrams, and logos is fast and easy!

DO IT ▶ *Presentations!*

Make a big impact with your presentation using CorelDRAW. Import and export with ease. Create slides, overheads, hand-outs or enhance on-line computer presentations.

DO IT ▶ *For Fun!*

Not only can you add flair to all your projects, you can create amazing illustrations, eye-catching greeting cards, invitations, certificates, and more. CorelDRAW's easy-to-use interface and incredible special effects let your imagination run wild!

CorelDRAW — the Perfect Partner!

For Windows, OS/2, UNIX. Now Available on CD-ROM!

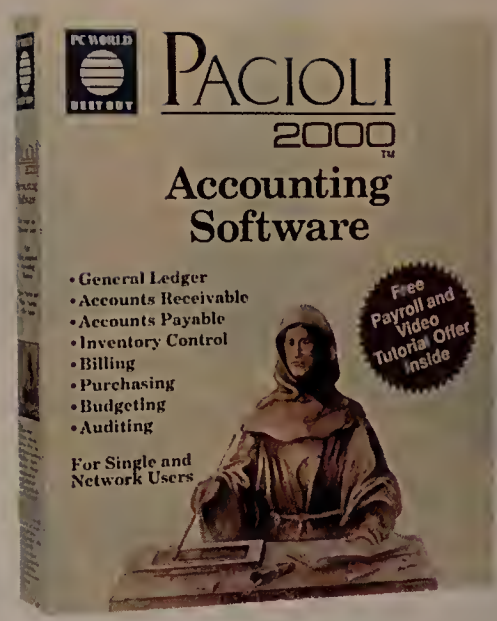
Enter the $1,000,000 CorelDRAW World Design Contest. Monthly Prizes!

COREL

TEL: (613) 728-8200
FAX: (613) 761-9176

Circle 92 on reader service card

The easy solution.



PC WORLD
BEST BUY

Full-featured Accounting...$49.95

Pacioli 2000™ can make your accounting easier. That's why it was created.

Pacioli 2000 was built from the ground up to simplify and automate the accounting process for businesses like yours.

But, don't take our word for it. Pacioli 2000 was named "The Best Financial Software of 1991" by *Compute* magazine.

It was chosen as "Best Buy" in both *PC World* and *The Computer Buyer's Guide and Handbook*.

Look at *PC Computing*. We made its "Businessware Top Twenty Sales List for 1991."*
And we were the only accounting program to make the list...period.

The only one.

How do we do it? We give you exactly what you want: An easy to use, yet powerful, accounting package *without* a powerful price tag.

Pacioli 2000 is full-featured accounting software. Eight fully integrated modules. Pull-down menus. Mouse support. Context-sensitive help.

And Pacioli 2000 has unlimited network capabilities — *at no extra cost*.

We have special offers for a Free Payroll system, a Free video tutorial, and a Free disk tutorial.**

We also offer a 90 day money back guarantee, when you order direct from M-USA.

And with all that, Pacioli 2000 still costs only $49.95 (plus $7.50 Shipping and Handling, Texas residents add 8.25% tax).

The more you compare Pacioli 2000 with *all* the other accounting software packages around, the more Pacioli 2000 becomes, not only the easy solution, it's also the best solution.

Order today: 800-933-6872 Operator 5

Special Pacioli 2000 Canadian Version
Supports GST and PST. Only **$99.95** (Canadian)
Suggested retail, freight extra.
To order, call: **800-668-0454**
Free offers not available in Canada.

M·USA™
BUSINESS SYSTEMS INC.
15806 Midway Road • Dallas, TX 75244-2195 • 214-386-6100

* *PC Computing*, January, 1992 issue, page 142.
** Free offers available to registered users only. $7.50 each is charged for shipping and handling.

Minimum Hardware Requirements: IBM or compatible computer with 500Kb of free memory available, hard disk, MS-DOS 2.1 or later (3.1 or later for networks), and 132 column dot matrix printer in compressed mode.

© 1992 M-USA Business Systems, Inc. All rights reserved. Pacioli 2000, Pacioli 2000 Payroll, and M2/S2 are trademarks of M-USA Business Systems, Inc. All others are trademarks or registered trademarks of their owners.

Circle 147 on reader service card

Data Compression of course, but

Which One?

Why not go with the real-time data compression software being used by more PC users worldwide!

Just install SuperStor 2.0 and you instantly increase your disk capacity by 2-3 times! Then use your computer the way you normally do, no extra commands or keystrokes are required.

SuperStor 2.0 provides up to 25% greater compression than before! It's the fastest, most advanced product of its kind, with many unique features that make it more powerful, easier to use, and far more flexible than the competition. Just look at the chart to review SuperStor's numerous features–many of which are not offered by other compression products.

SuperStor 2.0 is not only the most powerful, it's the most user friendly, too! Clear, colorful graphic displays make installing and using SuperStor simple. And, SuperStor 2.0 runs with all popular operating systems and application programs.

So when choosing data compression, SuperStor is the one!

For more information, please call 1-800-732-3133.

Not all data compression products are created equal!	*SuperStor New Version 2.0*	Stacker 2.0
Compresses hard drives, RAM, floppy, and other removable media by an average ratio of 2:1, doubling your disk capacity!	YES	YES
Real-time on the fly data compression doesn't slow down your PC!	YES	YES
Universal Data Exchange allows compressed floppies or removable drives to be read and saved by any PC!	YES	NO
Fully integrated menu-driven software program offers ease of installation and operation!	YES	NO
Advanced Compression Utility Tool Kit scans, checks, and repairs compressed data!	YES	NO
Advanced Disk Optimization Utility defragments or consolidates compressed data for optimal disk performance!	YES	NO
Highest compression ratio of any data compression software (up to 25% greater with version 2.0!).	YES	NO
Automatically updates CONFIG.SYS on physical partition to further enhance transparent operation!	YES	NO
Dynamically adjusts drive capacity to fit more data on compressed disks with less effort!	YES	NO
Performance enhancing Disk Cache results in faster system performance!	YES	YES
Device driver easily loads high, maximizing conventional memory for RAM-intensive applications!	YES	YES

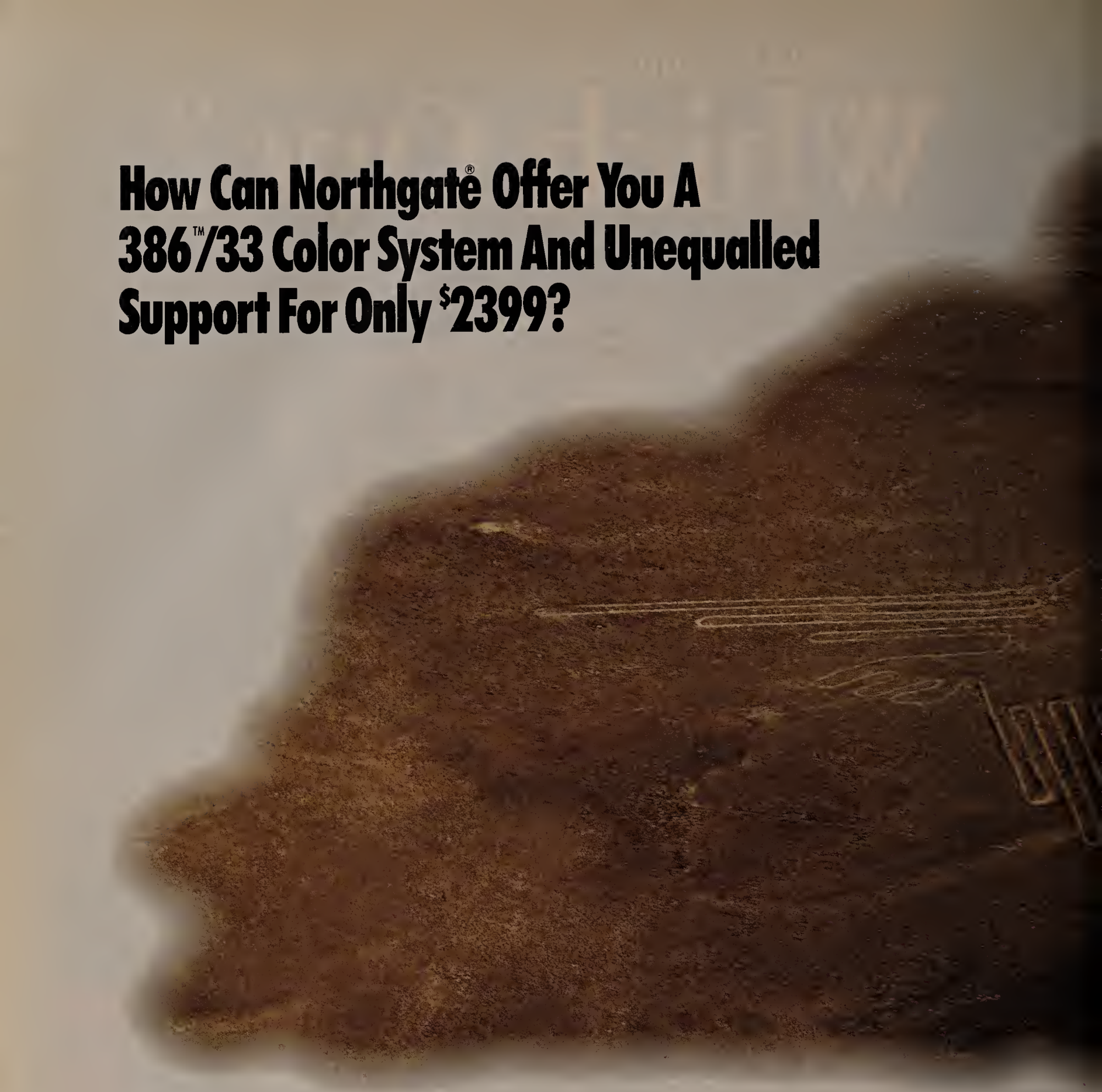
addstor

3905 Bohannon Drive
Menlo Park, CA 94025
Tel: 800-732-3133 ▪ Fax: 415-688-0466

AddStor and SuperStor are trademarks of AddStor, Inc. Copyright © AddStor, Inc., 1991. All rights reserved. Stacker is a trademark of Stac Electronics.

Circle 2 on reader service card

How Can Northgate® Offer You A 386™/33 Color System And Unequalled Support For Only $2399?



Like The Nazca Lines, Some Phenomena May Never Be Explained.

Today, like in ancient times, it takes great vision, teamwork and commitment to create something that is truly phenomenal. This is precisely the spirit behind the Northgate 386/33.

This system is the latest innovation from the same engineering team who captured numerous awards from *PC Magazine, Computer Shopper* and *InfoWorld.* Performance features include:

- 386/33MHz processor
- 4MB of RAM; expands to 32MB
- 64K cache
- 100MB IDE hard drive with 17ms seek time
- 1.2MB 5.25″ and 1.44MB 3.5″ floppy drives
- 14″ SVGA color monitor
- Exclusive *OmniKey*® keyboard
- Space-saving case with six 16-bit expansion card slots and three 5.25″ and two 3.5″ bays
- MS-DOS® 5.0
- Microsoft® Windows™
- Microsoft Mouse
- DiagSoft™ QA Plus™ system diagnostic/performance software
- FCC Class B Certified

Your Northgate 386/33 is backed by toll-free 24 hour technical support, a limited one year parts/labor warranty with on-site

©Copyright Northgate Computer Systems, Inc. 1992. All rights reserved. Northgate, OmniKey and the Northgate 'N' logo are U.S. trademarks or registered U.S. trademarks of Northgate Computer Systems. 80386SX is a U.S. trademark of Intel. MS-DOS, Windows and Microsoft are U.S. trademarks or registered U.S. trademarks of Microsoft Corporation. All other products and brand names are U.S. trademarks and registered U.S. trademarks of their respective companies. Specifications subject to change without notice. Northgate reserves the right to substitute components of equal or greater quality or performance. All items subject to availability. Offer good in the U.S. and Canada only. Prices shown are in U.S. dollars and do not include shipping and handling or

The Nazca Lines occupy a spread of over 190 square miles of Peruvian desert. Visible only by air, the cutstone lines create geometric designs, animals and figures of birds, like the hummingbird shown. While the purpose of the lines is an intriguing mystery, the most baffling aspect of the lines is how ancient craftsmen could engineer such massive figures without modern equipment or the ability to check their work by air.

intel inside™

hardware service from NCR® (second and third year plans available) and overnight shipment of replacement parts at our expense during the warranty period. Plus a 30 day money-back satisfaction guarantee.

Order yours today. You have nothing to lose. And a phenomenal computing solution to gain.

Northgate 386/33 MHz Color System $2399

*Lease as low as $86.02/month**

Call for a free Decision-Maker's Kit, complete pricing and custom configuration information.

800-345-0188

Major corporations, volume purchasers and government agencies call National Business Accounts: 800-345-0031

Charge it to your VISA, MasterCard, Discover, American Express or Northgate Big 'N' card.

NORTHGATE COMPUTER SYSTEMS, INC.

7075 Flying Cloud Drive, Eden Prairie, MN 55344

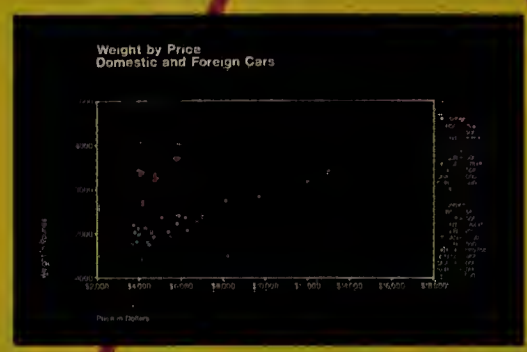
CODE N3704

appropriate sales taxes. We support the ethical use of software. To report sght violations, call the Software Publishers Association's Anti-Piracy Hotline at 1-800-388-PIR8 *Monthly lease payments are based on a 36-month standard, fair market value open-ended lease. 12-60 month leasing options available for qualified businesses.

Bend Us. Shape Us. Any Way You Want To.

As long as you love us, it's all right. And love us you will. Statistical software from SPSS is designed to work the way you work. By giving you the power to enter, edit, manage, analyze and present data on virtually every type of PC, workstation, minicomputer and mainframe. By giving you better decision-making ability through the most comprehensive set of statistical procedures available. And by giving you a choice of options to meet your specific data analysis needs. So if you're thinking about statistical software, think about flexibility. Because flexibility means value. And when it comes to value, we top the charts.

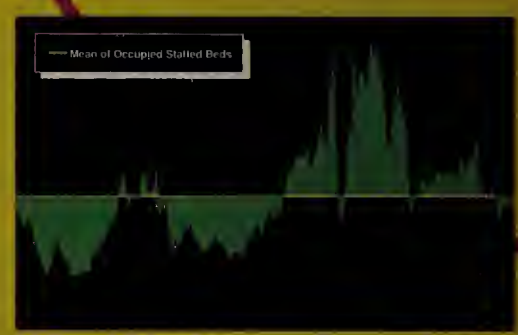
The Accessibility of SPSS makes it ideal for beginners and advanced users alike. With its straightforward menus and context-sensitive help and statistical glossary, SPSS gets you started fast. And with the help of our time-saving programming facilities, including macros and a matrix language, you'll have the power to go deeper even faster. And regardless of your experience with statistics, you'll be supported by the documentation and training that's set the industry standard for over 25 years. Documentation that INFOWORLD calls "The Best in the Business."



The Statistical Procedures in SPSS give you the power to examine data more thoroughly, revealing patterns that might otherwise go unnoticed. We offer the most in-depth group of statistical procedures available, including univariate and multivariate descriptives, model building, hypothesis testing, clustering and classification, survival analysis, time series and perceptual mapping. No matter what your question, SPSS provides the flexibility to find the answer.

The Data and File Management capabilities of SPSS give you unparalleled flexibility when preparing data for analysis. With SPSS, information can be quickly reorganized, cleaned and transformed, regardless of size or structure. Multiple missing values for nonresponses can be defined and labeled according to your specifications, while built-in controls easily manage information stored in complex file formats, including custom file formats. Self-documenting portable files give you the freedom to move your analysis from one computing environment to the next, saving time and resources. And because SPSS supports most popular microcomputer file types including Lotus,® DBF and SYLK, and offers free interfaces to such leading SQL-based database management systems as Informix,™ ORACLE® and Sybase,™ there's no need to re-enter data or write out intermediate files.

The Choice of Options offered by SPSS provides the flexibility to meet both your immediate and future data analysis needs. Unlike other statistical packages, we give you more than just the ability to choose between the options you may or may not need. We give you a choice of options designed to work together. Options that work as a system, providing the best possible software solution. Options for data entry and editing. Or producing publication-ready tables and reports. Options to analyze the past and help predict the future. Or to present your results with over 40 high-impact color displays, including a variety of charts and maps. No matter what you do, SPSS can help you do it better.



So if you're in the market for statistical software, keep an open mind. Go with the value of SPSS, suppliers of statistical solutions to over 2 million users worldwide. Because when you have the advantage of flexibility, the chances are you'll still be a hit tomorrow.

Call 1(800) 45-STATS or FAX (312) 329-366

SPSS *We're Making It Easier To Decide.*

Chicago · Washington, DC · Chertsey, UK · Gorinchem, The Netherlands · Munich · New Delhi · Singapore · Stockholm · Sydney · Tokyo · And Distributors Worldwide. **Statistical Software For All Leading Computing Environments.**

Circle 253 on reader service card

DATA BASICS

Tips and techniques for managing your data

by Steve Cummings

Q. *I administer a program of required and elective courses for our employees. How should I structure a* Paradox *data base for tracking students, teachers, and classes?*

Shaylor Broca
Duluth, Minnesota

A. A relational data manager like *Paradox* lets you examine data from multiple tables or files as a single unit. Thus, you can store data in the most efficient groups possible, then retrieve it as a unified whole. But you won't get the benefits of a relational system unless you set up the component tables properly. Make sure the tables have plenty of ID fields to help link the files together. The recommendations below will work with any relational data manager, not just *Paradox*.

Students: If your company has an employee data base containing each person's employee ID, name, job classification, and so on, see if you can use that. If the job classification doesn't already contain a field to determine which courses an employee must complete, add one.

Teachers: This table should provide columns for each teacher's ID, name, address, phone number, and so on.

Classes: You'll need basic info about each class. Include columns for the class ID, category or department, term in which it is offered, schedule, location, and teacher ID. By putting the teacher ID in this table, you'll be able to relate a teacher to each class.

Enrollment: You'll want one record (or row) for each student in each class. The two important fields here are Employee and Class ID, which will let you link this table to Students and Classes—and through Classes, you can link to Teachers. You might also want a field in this table for the student's grade or status. By using Enrollment as the center hub when you create queries, forms, and reports, you'll be able to list all the students in a class or all the classes a student has taken, or pair one student with one class.

Q. *I use* Alpha Four *to monitor my fire department's response and on-scene times. To do this, I need a calculated field that returns the number of minutes between the initial time, stored in a field called START, and the current time. The expression suggested in the Reference Manual reads:* **(VAL(SUBSTR(TIME(),1,2)) * 60 + VAL(SUBSTR(TIME(),4,2))) - (VAL(SUBSTR(START,1,2)) *60 + VAL(SUBSTR(START(),4,2)))**. *This works fine for events that occur within one day but gives an erroneous, negative result if midnight's passed since the time recorded in START. Is there a solution for people who work nights?*

Thomas R. Schultz
Shepherdsville, Kentucky

A. You certainly don't want to give the impression that you left before you came! Seriously, keeping track of elapsed time is useful for everyone from auto club dispatchers to plumbers. As long as you're sure that less than 24 hours will elapse between START and the current time, which seems likely in your application, there's a simple way to

Thanks to Paradox's Ask command, you can see how well Class C employees are doing in the various classes they're taking to further their careers.

Parallel Portable Peripherals by SDI

STORAGE DEVICES INC.

NO I/F CARDS REQUIRED

Connects to parallel port with printer feed thru

Move Data from . . . .
Desk to Desk . . . .
Room to Room . . . .
Around the World . . . .

Full Family of Storage Subsystems

- Hard Drives
- Removable Hard Drives
- Tape Backup
- CD-ROM Drives
- Read/Write Drives

Call for Price and Free Catalog

BOFFIN LIMITED

612-894-0595

FAX: 612-894-6175

2500 W. COUNTY RD. 42 • #5
BURNSVILLE, MN 55337

Circle 24 on reader service card

YOU WANT MORE INFORMATION BEFORE YOU BUY?

YOU GOT IT!

Turn to the Reader Service Card and product indexes at the back of this issue of *PC World*, circle the number of the product or company you want information about, and send it in.

We'll pay the postage. It's just another way that *PC World* delivers more of the news, reviews, and information you need to make intelligent PC buying decisions.

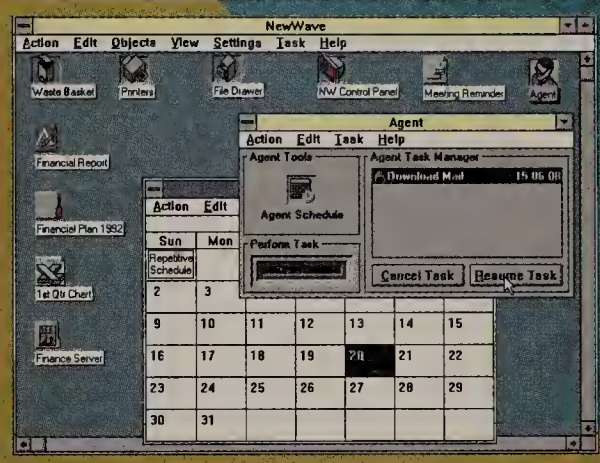
PC WORLD

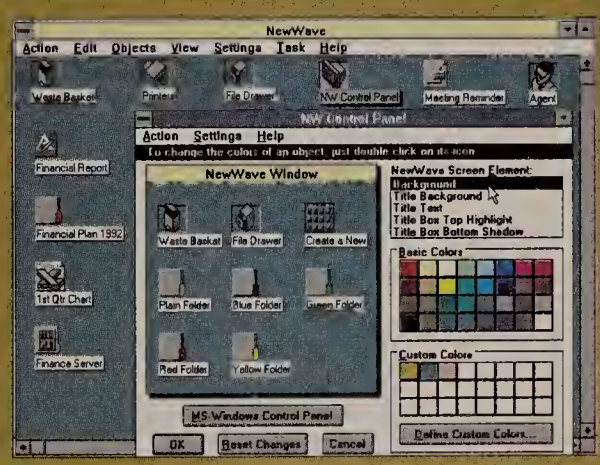
EXCLUSIVE PC WORLD OFFER!

FREE DEMO DISKS!

Hewlett-Packard® NewWave® 4.0

HEWLETT PACKARD NewWave





Test Drive Hewlett-Packard's NewWave 4.0, the Premier Desktop for Microsoft Windows

WHAT'S ON THE TEST DRIVE DISK? You'll receive a working model of Hewlett-Packard's *NewWave 4.0,* the premier desktop that keeps track of all the DOS/*Windows* files and programs in your system. *NewWave*'s Desktop Organizer provides unparalleled ease of use in the way it shields you from the complexities of DOS, manages your environment, and helps you organize your work using folders to keep track of projects and documents. *NewWave* raises your productivity to new levels. Begin with WorkGroup Libraries that make it easy to share information throughout a department. Next, save time by using *NewWave* Agents (macros) to automate a variety of tasks you currently perform manually—and preset the times you want them to be performed. *NewWave* will save you valuable time in learning and using your PC. With *NewWave,* you can focus on your job rather than on your computer.

Your *PC World* Test Drive also comes loaded with valuable additional features you won't find elsewhere, like sample Agents and a unique product guide that really puts *NewWave* to work for you. And test drivers can call their own special technical support help line. So hurry: Supply is limited, and demand is very high.

HOW DO I GET MY DISKS? It's easy. Simply complete and mail the postage-paid reply card, or call Hewlett-Packard at 1-800-525-WAVE (9283) x123. Expect your disks to arrive in three to four weeks. Remember...the supply is limited, and you won't see this offer anywhere else.

What are the system requirements?

- IBM PC AT or compatible using 80286 or higher processor with 640K base plus 2MB extended memory
- Hard disk with 4.2MB free space
- Windows standard or enhanced mode only
- Windows 3.0/3.1–supported DOS
- EGA,VGA, or higher-resolution monitor
- Mouse
- 5¼-inch 1.2MB high-density disk drive or 3½-inch 1.44MB high-density disk drive

Limited-time offer! Only in PC WORLD

☐ YES! I want to experience the excitement of *NewWave 4.0* from Hewlett-Packard. Please send me the PC WORLD–HP *NewWave 4.0* Test Drive without cost or obligation.

☐ My disk format is (check one only):
☐ 3½" 1.44MB ☐ 5¼" 1.2MB

CALL:1-800-525-WAVE(9283) x123
in United States

NAME

COMPANY

ADDRESS

CITY STATE ZIP

DAYTIME PHONE NUMBER

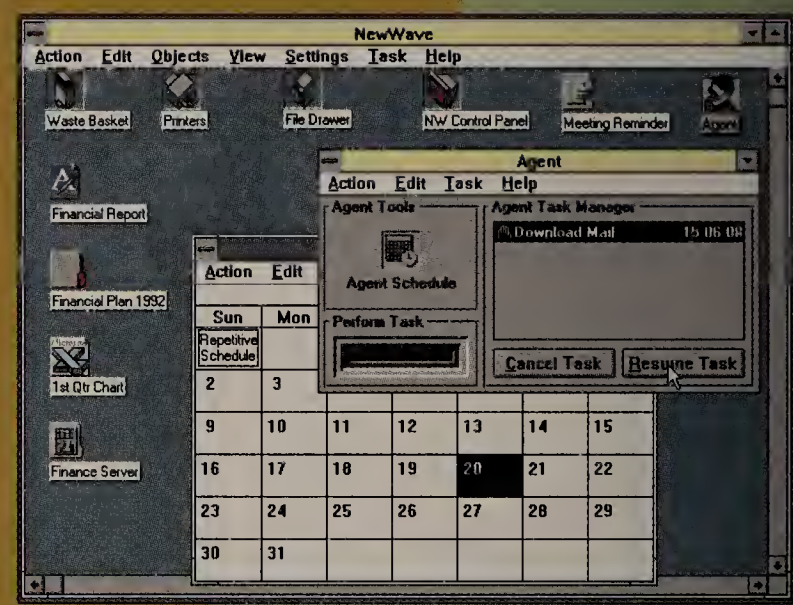
Offer good in United States and Canada. One per person. Offer expires July 31, 1992. Look for more exciting trial disk offers in future issues.

FREE DEMO DISKS!

Hewlett-Packard® NewWave® 4.0

This Exclusive Test Drive Brought to You by

PC WORLD



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 37 GREELEY, CO

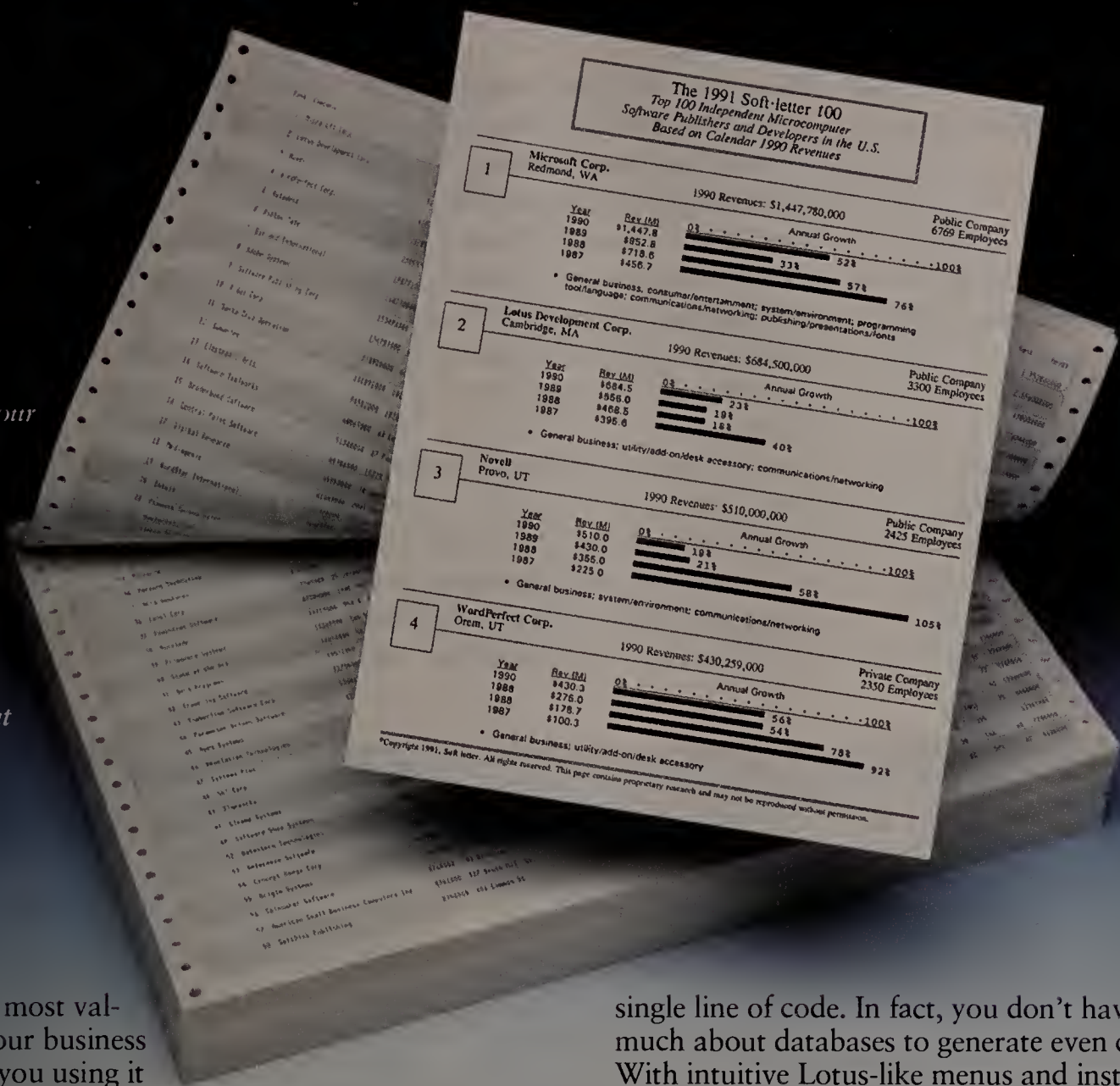
POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD–HP NEW WAVE 4.0 TEST DRIVE
HEWLETT-PACKARD COMPANY
P.O. BOX 1754
GREELEY, CO 80632-1754

Absolutely **FREE** while supply lasts. Special to PC World readers.

See Other Side for Details.

Turn your data into information.



R&R Report Writer turns your raw data into useful information. Create reports that relate, analyze, summarize and professionally present your data.

You need R&R if you use:
dBASE
Paradox
Fox
Alpha Four
Clipper
1-2-3
Quattro Pro

Data. It's the most valuable asset your business has. But are you using it effectively... to help you make decisions to grow and manage your business?

Now there's a way to get the most out of your data.

R&R Report Writer lets you take the data stored in your database files and turn it into comprehensive, easy-to-understand reports. Using these reports, you'll be better able to analyze trends in your business, make informed decisions and increase your overall effectiveness.

Unlike your database manager, R&R Report Writer lets you create sophisticated reports without having to write a single line of code. In fact, you don't have to know that much about databases to generate even complex reports. With intuitive Lotus-like menus and instant online help, you'll be creating reports soon after opening the package. Best of all, R&R uses different fonts so you can present your data with professional-quality output every time.

Join more than 100,000 others who, like PC World, say R&R is "the undisputed reporting champ". For just $249, you, too, can start turning data into information. See your dealer today.

PC MAGAZINE EDITORS' CHOICE · INFO WORLD TOP 100 1989 · 1990 DATA BASED ADVISOR Readers Choice Award 1989, 1990 · DBMS READERS' CHOICE 1989, 1990 · PC WEEK LABS ANALYST'S CHOICE

Free Demo Disk!
Call today for our free demo disk. See how R&R Report Writer works with your database to create professional-quality reports in only minutes!
800-325-9035 Ext. 8411

R&R Report Writer®

Concentric Data Systems, Inc.
110 Turnpike Road, Westborough, MA 01581 · Tel: 508-366-1122 · Fax: 508-366-2954

© 1991 Concentric Data Systems Inc. All product names are trademarks or registered trademarks of their respective owners.

Circle 181 on reader service card

PUBLISHING & PRESENTATIONS

Expert advice for creating high-impact documents and presentations

by Richard Jantz

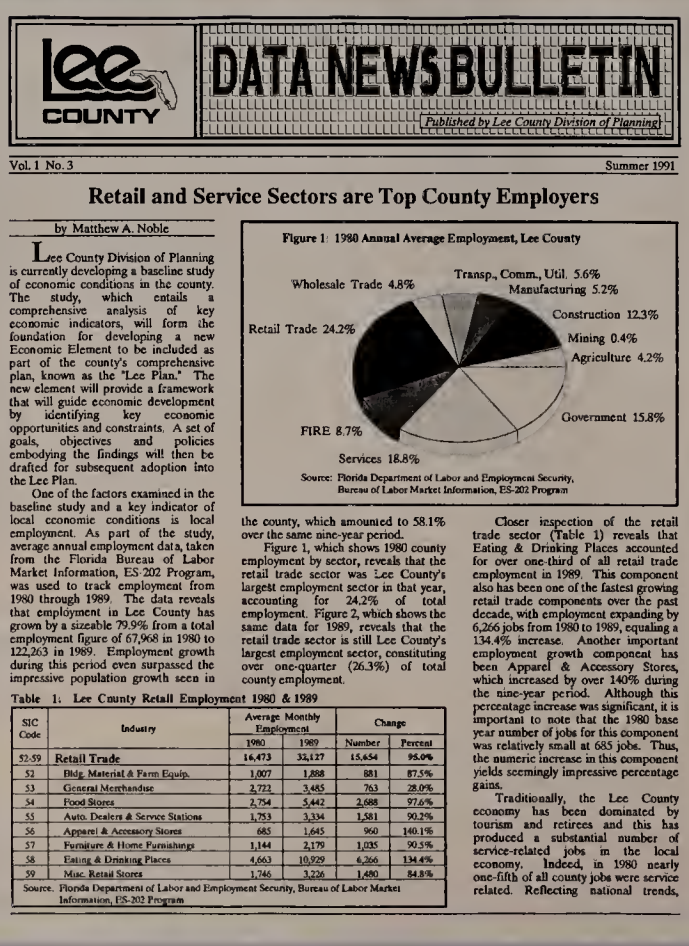
Want to improve your organization's image? One of the best ways is to revamp your newsletter with an easy-to-read format and a cohesive design. Most often it is the banner, or *nameplate*, displaying the newsletter's title that needs the most help. Because the nameplate conveys the newsletter's look and feel, it is arguably the most important element on the page.

As an example, we've redesigned the first page of an 8½-by-11-inch, four-page newsletter published by the Lee County Division of Planning in Fort Myers, Florida. The bulletin covering local business trends is mailed to select businesses to promote economic development in the community.

This document's nameplate is too cluttered with text and graphics. Another stumbling block is the scattered look below, especially the figure and table. Our goal was to create a more visually striking, unified appearance.

To create a snazzier nameplate, we discarded the boxes and background pattern used in the original and set the title on a single line using the same typefaces employed for headlines and text. We also cut the Lee County logo, which already appears on the newsletter's mailing side.

Before



Lee COUNTY

DATA NEWS BULLETIN

Published by Lee County Division of Planning

Vol. 1 No. 3 Summer 1991

Retail and Service Sectors are Top County Employers

by Matthew A. Noble

Lee County Division of Planning is currently developing a baseline study of economic conditions in the county. The study, which entails a comprehensive analysis of key economic indicators, will form the foundation for developing a new Economic Element to be included as part of the county's comprehensive plan, known as the "Lee Plan." The new element will provide a framework that will guide economic development by identifying key economic opportunities and constraints. A set of goals, objectives and policies embodying the findings will then be drafted for subsequent adoption into the Lee Plan.

One of the factors examined in the baseline study and a key indicator of local economic conditions is local employment. As part of the study, average annual employment data, taken from the Florida Bureau of Labor Market Information, ES-202 Program, was used to track employment from 1980 through 1989. The data reveals that employment in Lee County has grown by a sizeable 79.9% from a total employment figure of 67,968 in 1980 to 122,263 in 1989. Employment growth during this period even surpassed the impressive population growth seen in the county, which amounted to 58.1% over the same nine-year period.

Figure 1: 1980 Annual Average Employment, Lee County

Source: Florida Department of Labor and Employment Security, Bureau of Labor Market Information, ES-202 Program

Figure 1, which shows 1980 county employment by sector, reveals that the retail trade sector was Lee County's largest employment sector in that year, accounting for 24.2% of total employment. Figure 2, which shows the same data for 1989, reveals that the retail trade sector is still Lee County's largest employment sector, constituting over one-quarter (26.3%) of total county employment.

Table 1: Lee County Retail Employment 1980 & 1989

SIC Code	Industry	Average Monthly Employment		Change	
		1980	1989	Number	Percent
52-59	**Retail Trade**	**16,473**	**32,127**	**15,654**	**95.0%**
52	Bldg. Material & Farm Equip.	1,007	1,888	881	87.5%
53	General Merchandise	2,722	3,485	763	28.0%
54	Food Stores	2,754	5,442	2,688	97.6%
55	Auto. Dealers & Service Stations	1,753	3,334	1,581	90.2%
56	Apparel & Accessory Stores	685	1,645	960	140.1%
57	Furniture & Home Furnishings	1,144	2,179	1,035	90.5%
58	Eating & Drinking Places	4,663	10,929	6,266	134.4%
59	Misc. Retail Stores	1,746	3,226	1,480	84.8%

Source: Florida Department of Labor and Employment Security, Bureau of Labor Market Information, ES-202 Program

Closer inspection of the retail trade sector (Table 1) reveals that Eating & Drinking Places accounted for over one-third of all retail trade employment in 1989. This component also has been one of the fastest growing retail trade components over the past decade, with employment expanding by 6,266 jobs from 1980 to 1989, equaling a 134.4% increase. Another important employment growth component has been Apparel & Accessory Stores, which increased by over 140% during the nine-year period. Although this percentage increase was significant, it is important to note that the 1980 base year number of jobs for this component was relatively small at 685 jobs. Thus, the numeric increase in this component yields seemingly impressive percentage gains.

Traditionally, the Lee County economy has been dominated by tourism and retirees and this has produced a substantial number of service-related jobs in the local economy. Indeed, in 1980 nearly one-fifth of all county jobs were service related. Reflecting national trends,

After

The original nameplate is too cluttered and overshadows the headline. A straightforward line of type (set in 30-point Futura Extra Bold and Times Roman) is a more elegant choice.

The old issue identification line (set in 10-point Times Roman) is not distinct. Setting it in reverse type (6-point Futura Bold caps) on a thick black bar creates a stronger, more unified appearance and separates the nameplate from the rest of the page.

The original document lacks attention-getting contrast because it uses only one typeface (Times Roman) for headlines and body text. To enliven the material, we used a contrasting typeface (Futura) for the headline, the large initial cap in the first paragraph, illustration titles, and table heads.

ANTHONY RUSSO

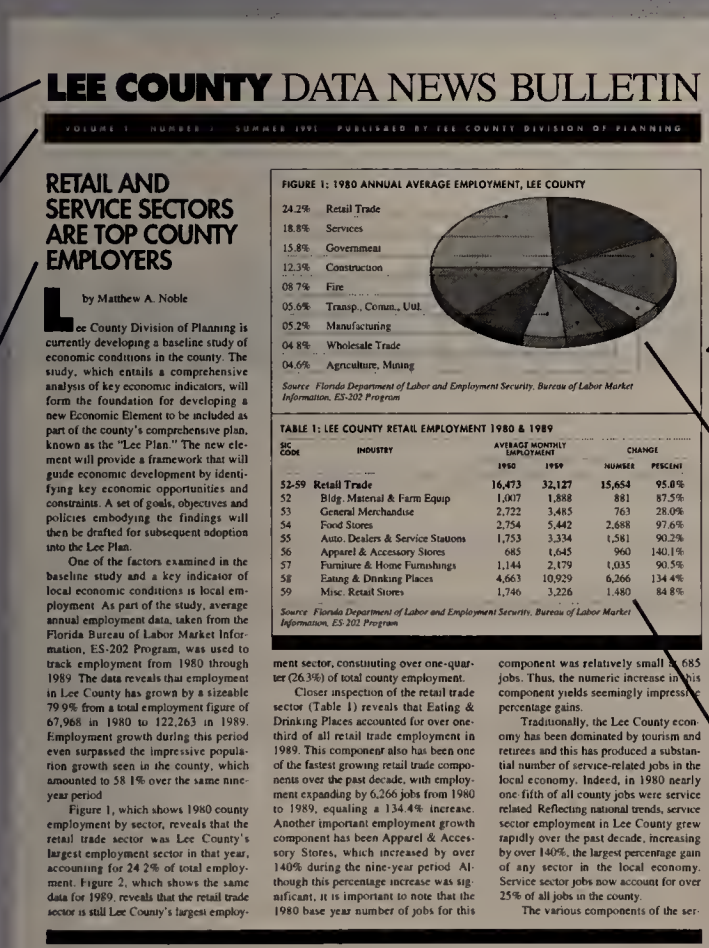
Next we moved the "published by" information to the issue identification line (volume, number, date) below the nameplate. We reset the line in reverse (white) type on a thick black bar to set it apart from the remaining information.

To make the newsletter more inviting, we grouped the two related illustrations (figure and table) together, creating a better flow of text. We also reorganized the figure (pie chart and labels) and table to focus their contents more directly on the subject of the headline. We removed extraneous rules around the byline and in Table 1, and enlarged the point size and changed the typeface of the lead story headline to emphasize its importance. Finally, we added thick black lines under the boxed illustrations and at the bottom of the page to help define the information.

This month's document is hardly a design failure. But with a simplified nameplate, more tightly organized layout, and added contrast through typefaces and rules, we think it stands a better chance of being read.

Send your publishing and presentations questions as well as business document and presentation make-over candidates to Richard Jantz, PC World Online, Publishing & Presentations; MCI Mail RJANTZ; 415/442-1891 (fax); or mail them to Publishing & Presentations, PC World, *501 Second St. #600, San Francisco, CA 94107.* PC World *pays $200 for documents used in a make-over. Sorry, we cannot acknowledge submitted materials.*

Contributing Editor Richard Jantz is the author of The PhotoStyler Book *(Peachpit Press, Berkeley, California, 1992). Larry Westdal, a graphic designer with Westdal Design Associates in Berkeley, California, also contributed to this article.*



LEE COUNTY DATA NEWS BULLETIN

VOLUME 1 NUMBER 1 SUMMER 1991 PUBLISHED BY LEE COUNTY DIVISION OF PLANNING

RETAIL AND SERVICE SECTORS ARE TOP COUNTY EMPLOYERS

by Matthew A. Noble

Lee County Division of Planning is currently developing a baseline study of economic conditions in the county. The study, which entails a comprehensive analysis of key economic indicators, will form the foundation for developing a new Economic Element to be included as part of the county's comprehensive plan, known as the "Lee Plan." The new element will provide a framework that will guide economic development by identifying key economic opportunities and constraints. A set of goals, objectives and policies embodying the findings will then be drafted for subsequent adoption into the Lee Plan.

One of the factors examined in the baseline study and a key indicator of local economic conditions is local employment. As part of the study, average annual employment data, taken from the Florida Bureau of Labor Market Information, ES-202 Program, was used to track employment from 1980 through 1989. The data reveals that employment in Lee County has grown by a sizeable 79.9% from a total employment figure of 67,968 in 1980 to 122,263 in 1989. Employment growth during this period even surpassed the impressive population growth seen in the county, which amounted to 58.1% over the same nine-year period.

Figure 1, which shows 1980 county employment by sector, reveals that the retail trade sector was Lee County's largest employment sector in that year, accounting for 24.2% of total employment. Figure 2, which shows the same data for 1989, reveals that the retail trade sector is still Lee County's largest employment sector, constituting over one-quarter (26.3%) of total county employment.

Closer inspection of the retail trade sector (Table 1) reveals that Eating & Drinking Places accounted for over one-third of all retail trade employment in 1989. This component also has been one of the fastest growing retail trade components over the past decade, with employment expanding by 6,266 jobs from 1980 to 1989, equaling a 134.4% increase. Another important employment growth component has been Apparel & Accessory Stores, which increased by over 140% during the nine-year period. Although this percentage increase was significant, it is important to note that the 1980 base year number of jobs for this component was relatively small @ 685 jobs. Thus, the numeric increase in this component yields seemingly impressive percentage gains.

Traditionally, the Lee County economy has been dominated by tourism and retirees and this has produced a substantial number of service-related jobs in the local economy. Indeed, in 1980 nearly one-fifth of all county jobs were service related. Reflecting national trends, service sector employment in Lee County grew rapidly over the past decade, increasing by over 140%, the largest percentage gain of any sector in the local economy. Service sector jobs now account for over 25% of all jobs in the county.

The various components of the ser-

FIGURE 1: 1980 ANNUAL AVERAGE EMPLOYMENT, LEE COUNTY

24.2% Retail Trade
18.8% Services
15.8% Government
12.3% Construction
08.7% Fire
05.6% Transp., Comm., Util.
05.2% Manufacturing
04.8% Wholesale Trade
04.6% Agriculture, Mining

Source: Florida Department of Labor and Employment Security, Bureau of Labor Market Information, ES-202 Program

TABLE 1: LEE COUNTY RETAIL EMPLOYMENT 1980 & 1989

SIC CODE	INDUSTRY	AVERAGE MONTHLY EMPLOYMENT 1980	1989	CHANGE NUMBER	PERCENT
52-59	**Retail Trade**	**16,473**	**32,127**	**15,654**	**95.0%**
52	Bldg. Material & Farm Equip	1,007	1,888	881	87.5%
53	General Merchandise	2,722	3,485	763	28.0%
54	Food Stores	2,754	5,442	2,688	97.6%
55	Auto. Dealers & Service Stations	1,753	3,334	1,581	90.2%
56	Apparel & Accessory Stores	685	1,645	960	140.1%
57	Furniture & Home Furnishings	1,144	2,179	1,035	90.5%
58	Eating & Drinking Places	4,663	10,929	6,266	134.4%
59	Misc. Retail Stores	1,746	3,226	1,480	84.8%

Source: Florida Department of Labor and Employment Security, Bureau of Labor Market Information, ES-202 Program

By grouping the figure and table together, the redesigned page looks less crowded and more cohesive—even though the original newsletter's three-column format remains unchanged.

The redesigned graphic is carefully organized to focus attention on the most important data—in this case, the retail trade and services sectors, which are the subject of the headline. By arranging the pie chart slices from largest to smallest according to percentage, it's easier to read and absorb the data.

To make the tabular material less imposing, we eliminated the excess vertical and horizontal lines and used lighter dotted lines to help guide the eye. Using Futura Bold for table heads and Times Roman Italic for footnotes added contrast to the text (set in Times Roman).

The award winning T2200SX

If you need any more power than thi

If your desire for power is on the scale of say, Louis XIV, consider the Toshiba T2200SX. Weighing a mere 5.5 pounds and taking up just half a briefcase, it possesses an awesome 20 MHz 386SX microprocessor and a 40, 60 or 80 MB hard drive with 2MB RAM expandable to 10 MB. And it's powerful enough to have grabbed both a PC/Computing MVP award and a PC Magazine Technical Excellence Award.

© 1992 Toshiba America Information Systems, Inc. The Intel Inside logo is a trademark of Intel Corporation. All symbols are trademarked and/or registered by their respective manufacturers.

The new T3300SL

aybe you should get into politics.

If your need for power is on the scale of say, Napoleon, consider the new T3300SL. It offers a 25MHz 386SL microprocessor plus 64 KB cache for blazing speed and longer battery life. Not to mention an 80 or 120MB drive and a PCMCIA-compatible slot. And like its cousin the T2200SX, it offers a Nickel Hydride battery and a carbon-fiber reinforced case. So call 1-800-457-7777. Or if you want even more power, don't forget it's an election year.

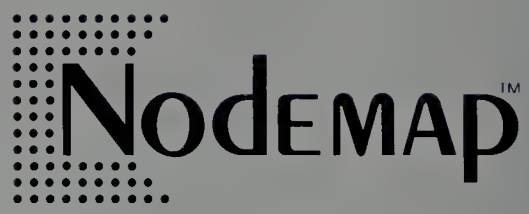
In Touch with Tomorrow
TOSHIBA

Circle 257 on reader service card

Throw Out Your Diagram Templates

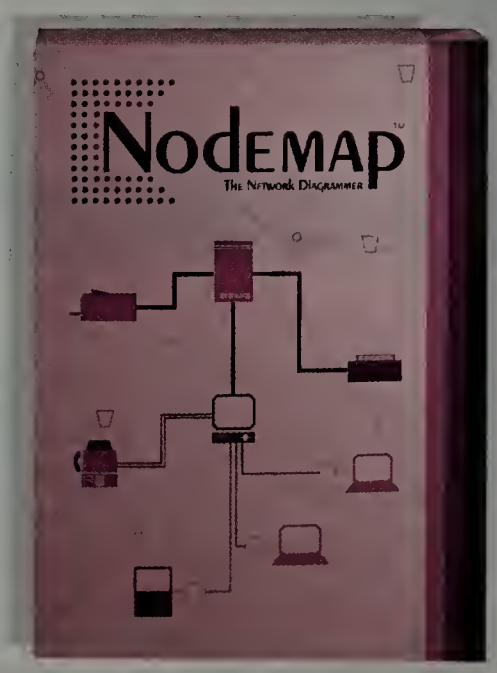
...is an amazing program that moves diagramming from the quill-pen age to the computer age. In any business there are processes and procedures that must be documented. Diagrams have always been useful, but the difficulty in producing them by hand has severely limited that usefulness. No more, as EasyFlow is a powerful program dedicated to the fast creation and easy modification of Flow charts, Dataflow diagrams and Organizational charts.

The program's powerful features include automatic line routing and automatic text centering inside shapes. The multi-level charting ability, 270 output device options and unparalleled support for desktop publishing and graphics packages have helped position EasyFlow as the DeskTop Flowcharting tool of choice with corporate managers.



...is specifically designed to help prepare LAN and WAN diagrams, telecommunication diagrams, and similar diagrams showing the interconnection involving computers and communication devices. Nodemap comes with the standard telecommunication and network planning symbols. Why spend valuable time tracing templates when you can select from a predefined library of shapes?

Nodemap makes it easy to compose, revise and print network related diagrams. The program's features allow you to track interconnections as well as important information about cabling and software rights. When your network changes, the diagrams can be easily modified and reprinted. Even large changes are effortlessly handled by a sophisticated cut and paste facility.



HavenTree's products are network ready with metering software and run on IBM PCs and compatibles (provided they have 512 K memory and a graphics video adapter).

HavenTree Software Limited
P.O. Box 1093-M
Thousand Island Park, NY 13692

Orders: 800-267-0668
Info.: 613-544-6035 ext. 27
Fax: 613-544-9632

Circle 98 on reader service card

COMMUNICATIONS Q&A

On-line resources for business and professional users

by Judy Heim

Q. *Is there a way to print the contents of a downloaded ZIP file without unzipping it? —Angela Newgord, Long Beach, California*

A. With the popular file compression utility *PKZip*, you can peek inside a compressed file, learn the names and sizes of individual files within it, and print any text file without unzipping it.

To see inside a zipped file, type **PKZIP** *filename* **-VC**. This gives a list of the files, their sizes, and their descriptions, if included. To print the contents of a compressed file without unzipping it, type **PKUNZIP -P** *ZIPfilename.* To print just one file, say INSTRUCT.DOC, inside a compressed file, type **PKUNZIP** *ZIPfilename* **INSTRUCT.DOC -P**. You may use wild-card characters, for example, *.DOC or *.TXT to print all the files inside the zipped file that have a DOC or TXT extension.

Q. *We're opening an office in Dakar, Senegal. We have access to Internet on this side of the Atlantic. Is there some way we can get low-cost access to Internet in Dakar? —David Quattlebaum, Cary, North Carolina*

Q. *I will be working in Siena, Italy, for nine months. I'd like to exchange E-mail with co-workers back home on Internet. Other than obtaining free access to Internet through a university computer in Siena, what's the cheapest way to do this? —Ian Spence, Toronto, Ontario, Canada*

A. The information age is supposed to transform the global village into a close-knit coffee klatch, but the crazy quilt of communications systems can make sending E-mail to the far corners as prickly as telegraphing from the top of a hill. Tens of thousands of users in more than 40 countries solve the problem with Internet.

For the business user overseas, though, there's a catch: Internet is the private preserve of governments and universities, which means a private citizen, armed only with computer and modem, can't subscribe. But if the home office uses Internet, and you can't gain access to a university computer or other Internet site, don't panic. You can always tap into Internet through commercial services such as CompuServe and MCI Mail, which are not part of Internet proper but are linked to it.

With MCI Mail's "preferred user" plan, for example, $10 a month buys unlimited E-mail to or from anyplace in the world. You can E-mail not only users of MCI Mail but also users of Internet and many other on-line services in the United States, such as CompuServe. Aside from that $10 monthly charge, the only other costs will be local telecommunications charges in the country from which you're calling.

In Senegal you'll pay a hefty $7.89 per month for a subscription fee, 32 cents a minute for the connect charge, and 29 cents per kilobyte transmitted on the Senegalese government's packet network (packet networks are special phone lines that transmit data). There's also a phone call charge of $1.97 for 6 minutes. If that's not bad enough, you'll be limited to 1200 bps.

Although you'll also be limited to 1200 bps in Siena, calling rates on the Italian packet network are cheaper than cappuccino at $4 per month, plus $1.19 an hour and a penny for each kilobyte transmitted. Unfortunately, you must submit a written request to the local district office of the Italian phone company for access to their packet service, and that can take a month to process.

For details about logging onto MCI Mail abroad, type **vue international** at MCI's main prompt. Enter **scan** for a list of countries, then type **read** followed by the number of the country from which you wish to access MCI Mail.

To route E-mail to Internet, type the name of the recipient on Internet. When you are prompted, choose *EMS* for electronic mail system, then type **Internet**. For a mailbox address, type the person's Internet address.

Send your communications questions to Judy Heim, PC World Online, Communications Q&A; CompuServe 75300, 713; MCI Mail 312-7737; GEnie JUDY.HEIM; Internet 3127737@MCIMAIL.COM; 415/442-1891 (fax); or mail them to Communications Q&A, PC World, *501 Second St. #600, San Francisco, CA 94107.* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

Judy Heim is a contributing editor for PC World.

ANTHONY RUSSO

REPLACE YOUR FILING CABINETS WITH A PC!

The 1st imaging system you can have up and running in a day!

To date, electronic image management systems have been very expensive. And getting one on-line has involved hundreds of man-hours and a lot of esoteric, dedicated hardware.

Westbrook Imagic!™ has changed all that. It's an inexpensive, software-based imaging system for the PC. Simple to install and use. And produces results from the very first day!

Converts paper files into images—simply!

Anyone can do it! Just open a file cabinet, take out a document and place it on a scanner. *Westbrook Imagic!* will do the rest. Converting fax documents is even easier! They're transferred into the computer's storage device, automatically!

Regardless of the type of document or method of input, the information is merged into a single, unified database. One file can contain everything from schematics, photos and facsimiles to checks and invoices.

All the power and flexibility you need!

Available in both stand-alone and multi-user LAN versions, *Westbrook Imagic!* provides a very powerful system for organizing, filing, archiving and retrieving scanned documents and fax images.

Our system works with any system!

Westbrook Imagic! operates under MS-DOS® and Microsoft® Windows™ 3.0 and is compatible with most popular personal computers and workstations, scanners, fax modems, printers and storage devices. So you can easily integrate it into your existing information networks.

Take the painless step into image management.

See how fast *Westbrook Imagic!*'s low-cost, electronic imaging system can go to work for you. Call today. Be on-line, tomorrow.

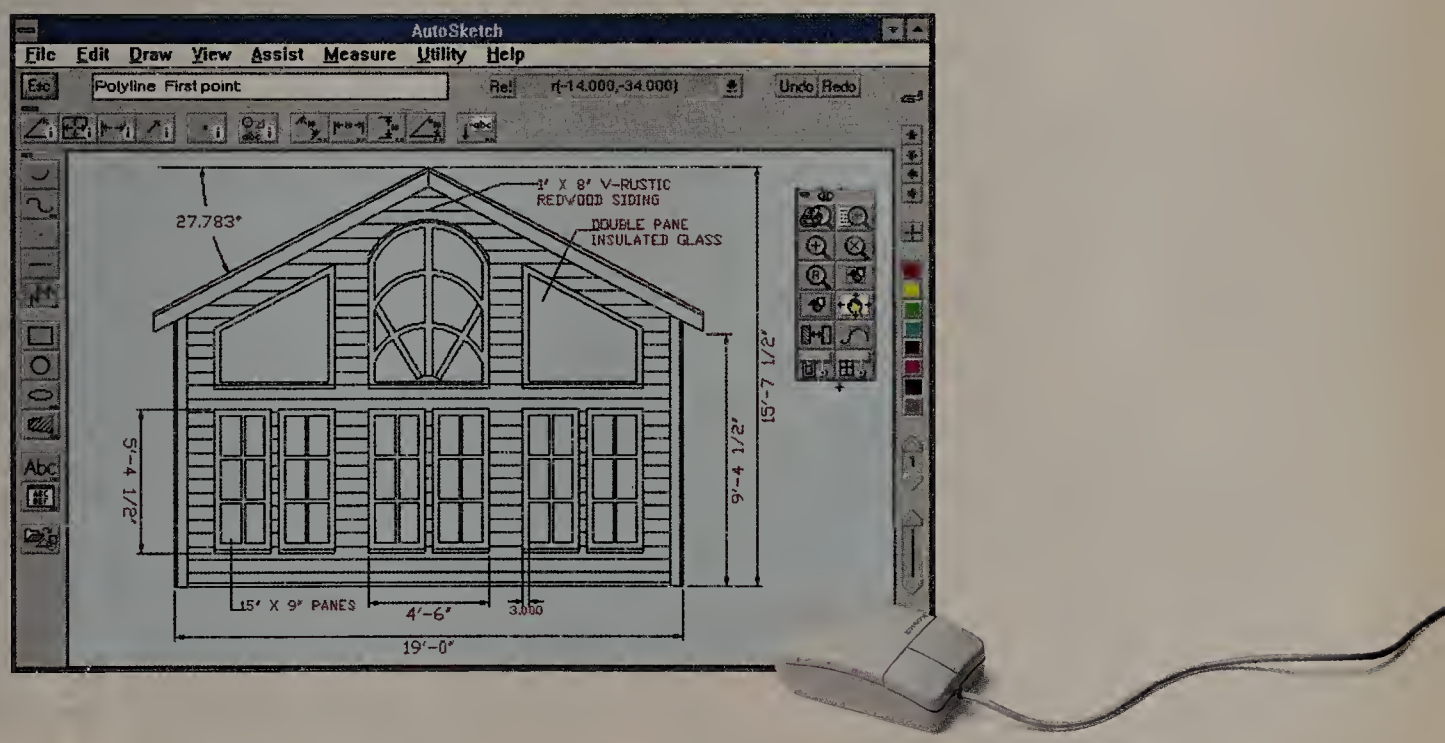
WESTBROOK imagic!™ the PC based imaging system

Westbrook Technologies, Inc., 22 Pequot Park Rd., PO Box 910, Westbrook, CT 06498-0910 • 203-399-7111 • Fax: 203-399-7137 • 1-800-874-1495

© Copyright 1991 Westbrook Technologies, Inc.; Portions Copyright 1988-89 Compucon Services Corp.; All Rights Reserved Worldwide. Portions Copyright 1984-90 FairCom Corp. Portions Copyright 1987, 88, 89, 90, 91 Z-Soft Corp. All Rights Reserved. Westbrook Imagic! is a trademark of Westbrook Technologies, Inc. Microsoft and MS-DOS are registered trademarks of Microsoft Corporation. Windows is a trademark of Microsoft Corporation.

Circle 301 on reader service card

Sketch for Windows.™



AutoSketch® for Windows.™

The big leap. From concept to reality. From rough sketch to technical drawing. Now AutoSketch for Windows helps you bridge that gap. We've taken all of the power and speed of AutoSketch 3.1 for DOS and added the most intuitive graphical interface on the market—Windows 3.0. The result: a precision drawing tool that works the way you do, but that doesn't require a long, drawn-out learning curve.

You'll have menus, icons, on-line help and customizeable toolboxes that make creating production-quality drawings quick and effortless. AutoSketch for Windows also comes with a library of over 2,000 professionally-drawn symbols so you can create a kitchen or a floor plan, a flow chart or a circuit board, in a matter of seconds. Just think of the time and effort you'll be saving. And of course there's DXF™ file compatibility—because you wouldn't expect anything less from the makers of AutoCAD.®

So call **1-800-223-2521** and ask for special offer A10. You'll see how quick and easy it is to get from concept to reality.

AUTODESK®

©1992 Autodesk, Inc. Autodesk, the Autodesk logo and AutoSketch are registered in the U.S. Patent and Trademark Office by Autodesk, Inc. Windows is a trademark of Microsoft Corporation. All other trademarks are the property of their respective owners.

Circle 4 on reader service card

WORD PROCESSING FOR WINDOWS AND OS/2

SIMPLICITY SPELLS SUCCESS

You're on your way with WINDOWS and OS/2 Word Processing from DeScribe 3.0

Simple to use, DeScribe® Word Processor 3.0 places power at your fingertips. Let your thoughts fly because DeScribe smoothly matches your pace to help you streak across the finish line in record time.

Best of all, simplicity does not mean sacrifice. DeScribe includes all the advanced features you expect in a modern word processor and more! Like multilingual spell checking and thesaurus. Built-in definitions dictionary. Dynamic Data Exchange. Tables, drawing tools and more import filters for text and graphic formats than any other word processor on the market.

Plus, formatting is just a mouse click away with the unique Text Toolbox. Merge text and graphics. Draw lines. Be creative. Have fun. DeScribe is there to help you.

All done? Restore past work with DeScribe's unlimited UNDO. Snapshot automatically protects you from WINDOWS UAE's and those times when power goes out.

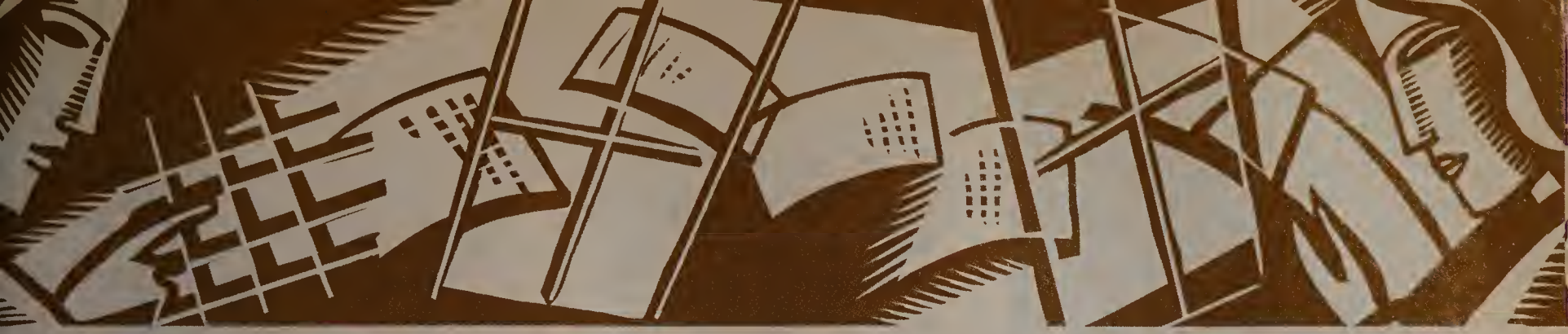
Still uncertain? Ask for a Trial Disk and take DeScribe for a test drive.

DeScribe®
WORD PROCESSOR

1-800-448-1586
FAX 916-923-3447
MCI MAIL DESCRIBE

Circle 83 on reader service card

See DeScribe at:
FOSE, Booth 4128, March 31-April 2
COMDEX/Spring, Booth 3221, April 6-9



WINDOWS WORKSHOP

Practical answers to your questions about Windows

by Jesse Berst and Scott Dunn

Two Printers, One Port

Q. *I just purchased a TI microLaser PS17, which offers both PostScript and HP LaserJet II emulations. I like to use LaserJet mode for speedy everyday output and bit maps, and PostScript mode for rendering fancy PostScript fonts. Although* Windows' *Control Panel lets you connect two printers (or emulations) to a single port, only one can be active. But I can't switch to an inactive printer or emulation from within* Word for Windows *or other* Windows *applications. To switch, I must slog all the way back to Control Panel. Is there an easier way?*

Efrem Silensky
Vernon Hills, Illinois

A. When you assign a printer or emulation to LPT1, you're not really connecting it to a port, you're connecting it to a port name. So you can create other port names—LPT1.HP and LPT1.PS, for example—and connect printers or emulations to them. When you send output to those new port names, *Windows* funnels data to the appropriate physical port—in this case, to LPT1.

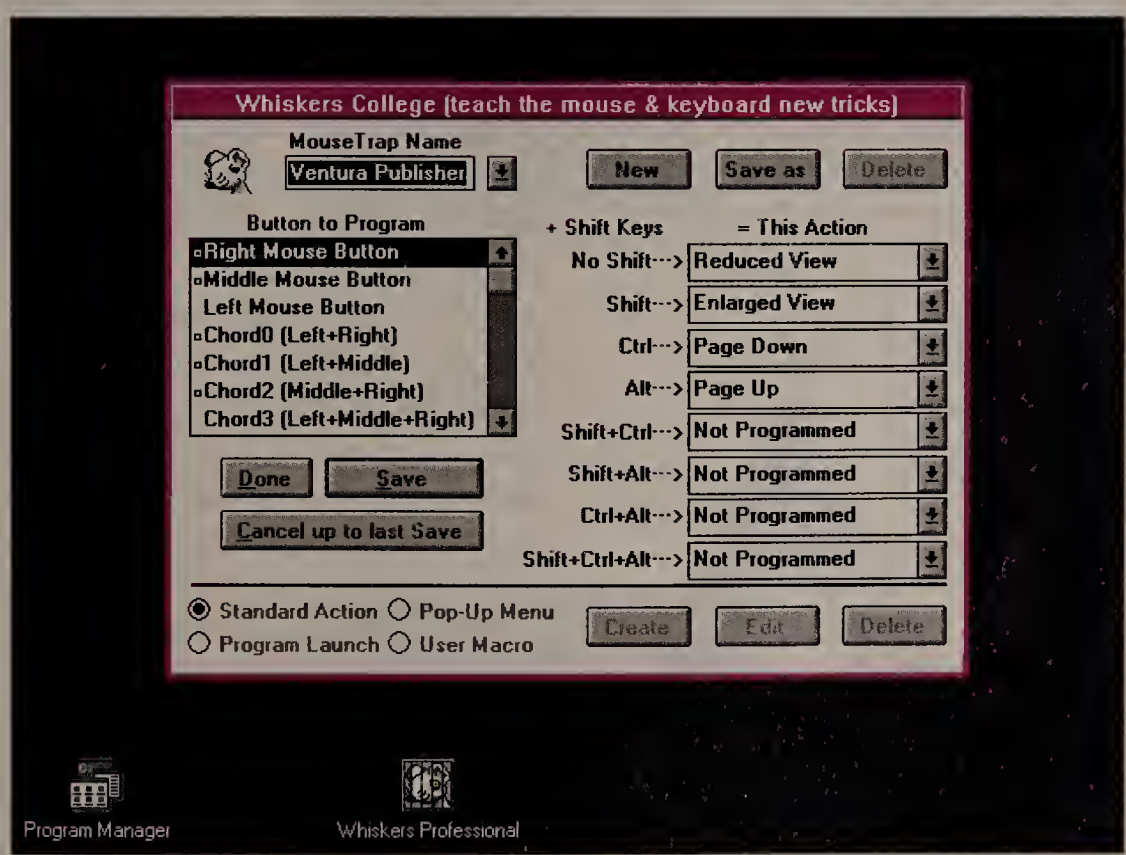
Open WIN.INI with a text editor. Locate the [ports] section, and add two new LPT1 port names, each with an extension that makes it easy to identify. For example, to distinguish your HP and PostScript emulations, enter:

LPT1.HP=
LPT1.PS=

Save WIN.INI, and exit your text editor. Open Control Panel, double-click the Sound icon, and click *OK.* (This is the fastest way to get *Windows* to read your WIN.INI changes on the spot.) Double-click the Printers icon, and select the HP driver in the Installed Printers list. Click the Configure button, select the LPT1.HP port in the Ports list, then click the Setup button and ensure all desired options are set. Click *OK* twice to return to the Printers dialog box. Your PCL/HP printer emulation should be active. Now select the PostScript emulation from the Installed Printers list, click *Configure,* select the LPT1.PS port, and follow the steps above. Be sure to make this emulation active as well. To make one emulation the default, double-click the appropriate entry in the Installed Printers list. Click *OK,* and exit Control Panel.

Now when you're in *WinWord*'s Print Setup dialog box, you'll be able to switch between emulations on the same port as if you were switching between different printers connected to different ports. Fortunately, this work-around won't be necessary in *Windows 3.1.*

Windows Toolbox



Whiskers Professional, a new incarnation of that popular mouse utility, lets you simulate a three-button mouse, assign keystrokes or macros to each mouse button or to any simultaneous two-button click or "chord," create pop-up menus for each key or combo, and make all these options specific to the currently active application. Numbers & Co., Rt. 1, Box 59A, Oroville, WA 98844; 509/476-2216, 509/476-3172 (fax). List price: $49.95. Reader service no. 739

Accounts Receivable

Meet Clyde the Collector. Persistent. Arrogant. Unlikably Friendly. Trained in old fashioned 'cash management techniques.'

Now meet BusinessVision II.® The small business accounting system designed to do things your way. Reliably. Effectively. Powerfully. Real-time automatic posting and updating. Up-to-the-minute sales analysis and financial reporting. Fully-integrated accounting functions presented in a graphically dynamic way. Timely and accurate cash flow without losing friends. And at $225*, without investing a fortune.

For a Free Demo Disk call 1-800-433-3384 Ext. 27 (Mon. - Fri. 9am-5pm PST). Or look for our distinctive triangular package at selected computer dealers. Tell 'em Clyde sent you.

BusinessVision II®

Bringing Small Business the Power and Strength of the Triangle ™

BusinessVision II is loaded with uncomplicated yet powerful features: Accounts Receivable, Accounts Payable, General Ledger, Inventory Control, Order Entry & Billing, Point-of-Sale Billing/Cash Drawer Control, Sales Analysis, Payroll, Export, Automatic Posting, Financial Reporting, Mailing Lists/Labels, Interactive Tutorial/User Handbook. Adapts to your forms and business technology. *$225 suggested retail - dealer price may vary. Requires IBM PC/100% compatible, 420K RAM with MS DOS Version 3.1 or higher. In Canada call (416) 629-3233. ©1992 BusinessVision Management Systems Inc. All Rights Reserved.

Circle 25 on reader service card

Restoring the DOS Icon

Q. *While installing a non-*Windows *application and assigning it an icon, I lost the DOS Prompt icon and can't get it back. I can, of course, just exit* Windows, *but clicking an icon is easier.*

J. J. Gray
Ft. Lauderdale, Florida

A. Not to worry. Open the File menu; select *New • Program Item • OK.* In the Description field, type **DOS Prompt.** In the Command Line field, type **C:\COMMAND-.COM.** Click *OK.* The icon will reappear.

Where Is WINA20.386?

Q. *After a recent hard disk disaster, I used bootable DOS 5.0 floppies to reformat my C: drive, and put system files on it. I made a DOS directory and copied my DOS files into it. I reinstalled* Windows 3.0, *but now it won't run in 386-enhanced mode. It says it needs the file WINA20.386 in the root directory of my boot drive, but I can't find it on the original* Windows *disks.*

Eric Wong
Los Angeles, California

A. You'd be surprised how often this happens. You can't find WINA20.386 because it comes with MS-DOS 5.0—not *Windows*. Since DOS 5.0 installs it in the root directory, your bootable disks, copied from your DOS directory, lack this all-important read-only file. The same problem arises when you've erased the file or it's not in the root.

If you've merely moved this file to another directory, moving it back to the root will solve the problem. Otherwise, to find WINA20.38_ (the underscore character indicates a compressed file), you'll have to dig through your original DOS 5.0 floppies; it's usually on disk 5. With the proper floppy disk in drive A:, enter

C:/DOS/EXPAND A:\WINA20.38_ C:\WINA20.386

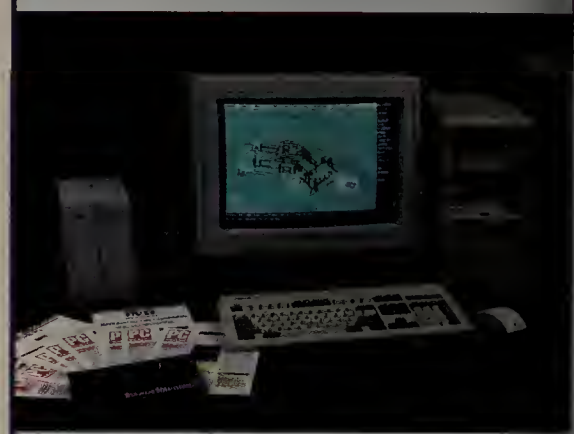
at the DOS prompt.

If you'd rather keep your root directory clean, you can put the file in a directory such as C:\DOS by adding the following line to your CONFIG.SYS file:

SWITCHES=/W

SMART CHOICE

"If you appreciate intelligent design, you'll appreciate Dyna Micro Computer"
- PC Magazine
Feb. 12, 1991



Workmaster 486/50
Intel 80486 - 50 w/4MB
256K Cache
200 MB Hard Drive 15ms
1280 x 1024 Video Card
20" Monitor non-interlaced
1.2 and 1.44 FDD
Mouse/Keyboard

Workmaster 386-33 $1,995 complete system
Workmaster 486-33 $2,995 complete system
Workmaster 486-50 $4,995 complete system

- 30 days money-back guarantee
- Designed & Manufactured in USA
- 800 Toll Free Tech Support
- 1 year warranty
- TRW on site service available

DYNA Micro Inc.

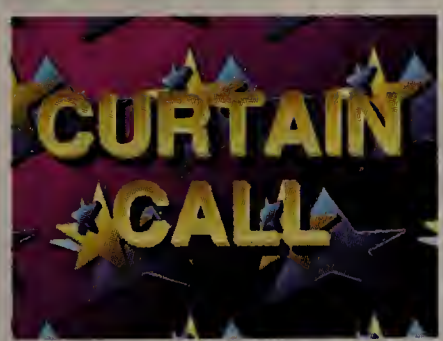
1-800-336-3962
1-408-943-0100
(INSIDE CA) PCW1

Circle 85 on reader service card

Blockbuster Presentations

Businessman's Budget

Curtain Call™ Presents... Titles, Effects, Backgrounds, Paint, Slide Show, Sound and Music for Windows.



Dazzling Titles

Dynamic Graphics

Powerful Effects

Get Rave Reviews.
Produce top-of-the-line presentations or videos that look good on the bottom line. You've got to try Curtain Call.

Talent Not Needed.
Because Curtain Call provides the cast and crew, making spectacular images is now a breeze. Start by producing a rainbow of beautiful backgrounds with just a click of the mouse. Then transform any Windows fonts into dazzling titles with shadows, outlines, metallics and 3D extrusions. Add your own artistry with Curtain Call's full-featured and easy-to-use paint tools. Finish it off with pictures, text, graphs, or still-frame video imported from other programs through Curtain Call's clipboard.

It's Show Time.
Your images can be sequenced and controlled with the mouse or menu-driven script editor. Slick variable speed transition and overlay effects add lots of polish. Preview any portion of your show at any time. Synchronize voice, sound effects and music, through Sound Blaster or another PC sound board. It's a blast!

Curtain Going Up.
It doesn't take an M.B.A. to figure it out. What used to cost thousands can now be yours for under $200.

Make Curtain Call your Windows presentation star and listen to the applause. Break a leg for $199.95.

ZumaGroup

Brown Wagh

160 Knowles Drive, Los Gatos, CA 95030
(800) 451-0900 (outside CA)
(408) 378-3838 (inside CA)
(408) 378-3577 (fax)

All names of companies and products as they appear are the registered trademarks and/or trade names of the respective companies.

Circle 86 on reader service card

Then add a line like this one to the [386Enh] section of the *Windows* SYSTEM.INI file:

Device=C:\DOS\WINA20.386

Send your Windows *questions to* Windows Workshop, PC World, *501 Second St. #600, San Francisco, CA 94107-1431; PC World Online, Windows Workshop; CompuServe 74055,412; MCI Mail 179-3813; or 415/442-1891 (fax).* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

Jesse Berst is a contributing editor for PC World. *He and Scott Dunn are co-authors of* 101 Windows Tips *(Peachpit Press, Berkeley, California, 1991).*

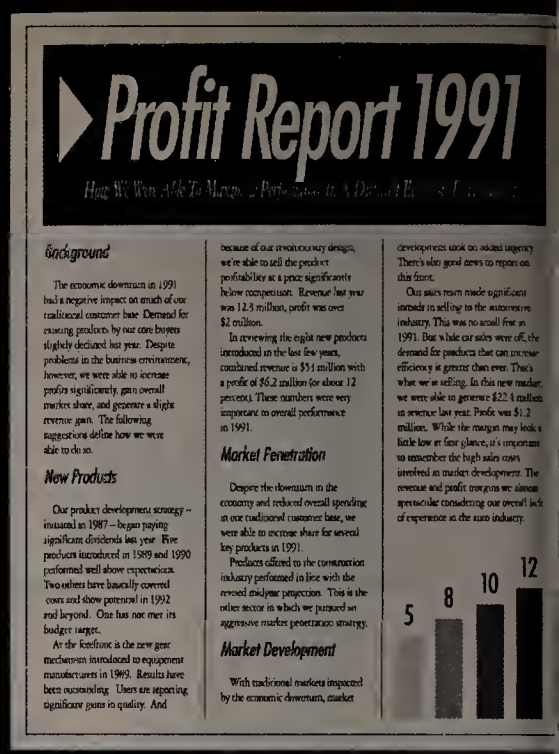
POWER TIP NO. 241

Narrowing Your cc:Mail Search

The *reTrieve messages* selection from *cc:Mail*'s main menu is powerful if used properly. For example, it gives you quick access to all new messages, even if they're spread out between your in-box and bulletin boards. But when you have a lot of messages in your in-box, bulletin boards, and folders, you can speed the search by narrowing its focus. If you want to retrieve new messages from, say, a particular bulletin board, select *reTrieve messages*, then *retrieve from bboard/Folder*. Choose the bulletin board, and select *search for New messages* to list just the new messages, or to list your messages by another criteria, such as person or keyword.

Rex Farrance
Assistant Editor

HOW TO CREATE BORING DOCUMENTS



It's easy: Just keep doing what people have done for years.

Black on white slides and transparencies. Or, to liven things up just a tad, maybe go to blue on white or reversed type. Still pretty dull stuff.

Plain memos, correspondence, and releases. Typed or printed. It really doesn't make a difference. Because either way, they're going to look humdrum.

No doubt, commonplace documents are very common. But despite their widespread use, they have one really significant problem. That is, they're boring. They make your ideas look like everyone else's. Common, dull, boring. And unless that's the way you want your ideas to come across, it's time to try something different.

HOW TO CREATE DYNAMIC DOCUMENTS

It's easy: Use PhotoFinish.

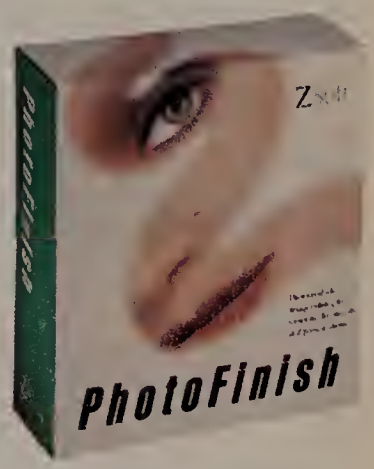
PhotoFinish. The image enhancing software from ZSoft that lets you add the visual impact of photography to your documents.

Forget being limited to black on white, blue on white, or reversed type. PhotoFinish lets you create and edit images with up to 16.7 million color combinations. Or convert color photos to gray scale so you can output on a laser printer.

Forget plain. Add mosaic looks or emboss, motion blur, edge detect. Adjust brightness, contrast, and color intensities. And much more. There's virtually no limit to what you can do right on your PC to make your documents look alive.

Even the computer novice can take full advantage of the creative firepower PhotoFinish provides. The result will be documents that help you and your ideas stand out in a crowd.

PhotoFinish. It's never been so easy to be dynamic.



For more information or to purchase, visit your local software dealer or call ZSoft at ***1-800-444-4780.***

ZSoft
CORPORATION

450 Franklin Road, Suite 100
Atlanta, Georgia 30067
(404)428-0008

PhotoFinish is a registered Trademark of ZSoft Corporation

Circle 321 on reader service card

The Most Comprehensive Pen Event of the Year!

Call (508) 470-3880
to register or receive more information.

Pen-Based Computing Conference

Boston / May 4-5, 1992

Keynote Presentations

Pen Computers: A New Metaphor for Computing
By Conference Chairman, Ed Yourdon, "American Programmer"

Pen Computing: A Whole New World of Computing – Again!
By Portia Isaacson, Dream Machine Incorporated

Survey of Pen Products: Understanding Where You Fit In
By Kirk Cruikshank, GRiD Systems Corp.

Market Size Track

The Pen-Based Computing Marketplace
By Amy D. Wohl, Wohl Associates

The Pen Market: Success and Growth Factors
By David R. Larson, Notable Technologies

Hardware Track

Putting Pens into the Picture: From Hardware to User Interface / By Dr. John Butler, Microsoft Corporation

Handwriting Recognition for Pen Computers
By Dr. David Fox, Nestor, Inc.

User/Application Track

Developing and Implementing a Pen-Based Application
By Theodore C. Standish, Gillette North Atlantic Group

PANEL — Developing Pen Solutions: The Untold Story
MODERATOR: Daniel Mezick, Linc Systems

DEMO PANEL — Product "Snapshots"
MODERATOR: Bruce A. Stephen, IDC

Software Track

PANEL — OS Wars: Microsoft vs. GO: Which is Better?
MODERATOR: Esther Dyson, EDventure Holdings

Developing Pen-Based Solutions
By George M. Barlow, Distributed Micro Systems

Management Issues Track

Management Issues in Evaluating Pen Computer Systems
By Chuck Ennis, TelePad Corporation

Integrating Pen-based Computing with the Rest of Enterprise Computing
By Mark Skapinker, Delrina Technology, Inc.

Communications Track

Survey of Current Pen Technology
By Kevin Mankin, Momenta International

Networking on the GO: Connectivity for the Mobile Professional
By Lucia Hicks-Williams, Sitka Corporation

Live Product Demos by:

GO Corp.
GRiD Systems
NCR
Notable Technologies
MOMENTA
Scriptel

Conference Sponsor:

Digital Consulting, Inc.

Co-Sponsors:

PC WORLD

NCR

notable

WACOM

MOMENTA

Scriptel CORPORATION

PENtop

PEN VISION
The Newsletter of Pen-Based Computing

VAR Herald!

ØA42WP

The Pen-Based Computing Conference

Boston / May 4-5, 1992

The Revolution Has Begun

Pen-based computing is the new revolution of the '90s, promising to be as important as the PC revolution was a decade ago. Industry experts predict that within a few years, more than half of the laptop computers sold in the U.S. will be pen-based, using a stylus rather than, or in addition to, the familiar keyboard input. **All the information you need on this exploding new field is available at this conference.**

This Conference Covers All the Issues

This conference offers **comprehensive coverage of pen computing** through separate sessions on hardware and software, management issues, user experiences, and market forecasts. The various tracks at this event cover virtually every aspect of this new revolution. Key industry leaders and visionaries will be available for you to talk to during the conference, and the leading developers will be exhibiting their wares. This is your chance to learn about pen computing from the pioneers in the field.

Learn from the Pen Pioneers

The following pioneering organizations will be at the conference to give you the detailed information you need to help you make pen a reality in your world.

- American Management Systems, Inc. (AMS)
- CalComp Digitizer Products Group
- Dream Machine Incorporated
- GO Corporation
- GRiD Systems Corp.
- Kurta Corp.
- Linc Systems
- MOMENTA
- NCR
- Notable Technologies, Inc.
- PenMagic Software Inc.
- Pen-based Computing
- Poqet Computer Corporation
- RESELLER MANAGEMENT
- Scriptel Corporation
- WACOM COMPANY, LTD.

DCI
Digital Consulting, Inc.

Conference Sponsor:
Digital Consulting, Inc.
204 Andover Street
Andover, MA 01810

(508) 470-3880

Call today to register–this conference promises to be a sell-out! To receive more information return the card below.

See other side for a description of additional events offered by DCI.

☐ **Yes! I'd like more information about the Pen-Based Computing Conference** (2789)

NAME/TITLE _____

COMPANY _____

DIVISION _____ MAIL STOP _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE (_____) _____ FAX (_____) _____

DCI's other leading edge conferences:
(See other side for a description of these events)

☐ The Windows Client/Server Workshop (2794)
☐ Downsizing EXPO (2756)
☐ CLIENT/SERVER WORLD (2770)

Drop this card in the mail or fax it to (508) 470-0526.

CA42WP

The Pen-Based Computing Conference

This conference offers comprehensive coverage of pen computing from the industry pioneers who are shaping the future. The mission of this conference is to familiarize you with pen and bring you all the information you need to prepare for the pen tidal wave that will soon sweep over the computer industry. Key industry leaders and visionaries will be on hand to share their views on hardware and software, management issues, user experiences, and market forecasts. Plus, the leading developers will be exhibiting their wares and giving you a chance to try pen for yourself.

DCI's other leading edge conferences:

Windows Client/Server Workshop

Test Driving Tools for the New Application Development Environments

Windows, Presentation Manager, Apple, Motif and OpenLook

This workshop gives you the opportunity to see all of the industry's hottest application development tools in action. To help you compare and contrast the full power of their products, the leading vendors will walk you through an entire application development effort in 75-minute live demos. These products defy simple comparisons—live demos are mandatory. In addition, this workshop gives you the chance to hear leading consultants and industry experts discuss the technical and managerial issues surrounding windows client/server technology.

Downsizing EXPO*

Downsizing EXPO, the original and most extensive downsizing event, features three information-packed days of conference presentations covering five crucial areas: Client/Server DBMS, Windows Applications, Networks and Network Management, Open Systems, and Downsizing Experiences. The Downsizing Exposition is held concurrently with the conference and features a showcase of over 100 vendors displaying and demonstrating the latest products and advancements in the downsizing arena.

CLIENT/SERVER WORLD*

Client/Server World is the only conference and exposition that explores in-depth the vital new technology called client/server computing. Incorporating three entire conferences: The Client/Server Applications Conference, The Client/Server Databases Conference, and The Client/Server Networking Conference, attendees are provided with a comprehensive education on all aspects of client/server computing. To complete your education there is an exposition to keep you up-to-date on the latest technical advancements in client/server computing products and services.

*Service mark of Digital Consulting, Inc.

For more information call DCI at (508) 470-3880 or return the card below.

First Class
Postage
Required

Digital Consulting, Inc.
204 Andover Street
Andover, MA 01810

USER GROUP TIPS

Helpful hints from members of the nation's user groups

FIAN ARROYO

What's Hidden in Your Directory?

In DOS 5.0, the old, outdated DIR command finally received a much-needed overhaul, so you can now get more information with a directory listing. For instance, while the old DIR couldn't show a single hidden file, now you can list all the hidden files on your disk by typing **DIR \ /S /A:H**.

How does it work? The backslash (\) does what it has always done—tells DOS you want a listing of the root directory. But the /S parameter means you want more than just the root directory, you want listings from its subdirectories as well—i.e., from every directory on the disk. /A:H tells DIR to list only files in which the Hidden attribute is turned on.

That's just a start. Suppose you want a list of every file in a directory and its subdirectories, and you want that list to be easily readable. Try **DIR /P /W /S /A:-D**. As in older versions of DOS, /P pauses the directory listing a screen at a time, and /W gives you a wide listing with more file names per screen. Once again, /S tells DOS to list files in the current directory and its subdirectories. But you needn't list the directory names along with the file names—that's where /A:-D comes in. This variation on the /A (attributes) parameter tells DOS not to include directory names when it lists the file names.

It's worth a little time to see what the DOS 5.0 DIR command has to offer. Type **HELP DIR** or **DIR /?** for a listing of all the new and old DIRectory parameters.

Bob Mackett
CAL-PC
Calgary, Alberta, Canada

Getting Started on the Right Word Macro

It's easy to get *Microsoft Word for DOS 5.x* to run a particular macro every time you load the program. Simply name the macro AutoExec, and save it in your NORMAL.GLY glossary file.

But I prefer to use different opening macros for the various jobs I perform in *Word*. The solution? I maintain a number of GLY files, one for each AutoExec macro I need; I use batch files to turn these GLY files into the default NORMAL.GLY as I need them. For instance, I might create a glossary called MERGE.GLY, with an AutoExec macro that prepares *Word* for merging letters. I'd then create a MERGE.BAT file that looks something like this:

```
c:
cd/word
ren normal.gly hold.gly
ren merge.gly normal.gly
word
ren normal.gly merge.gly
ren hold.gly normal.gly
```

By simply typing **MERGE** at the DOS prompt, I can start my *Word* mail merges automatically.

Steven Friedman
Sacramento PC Users Group

ATM to Order

If you're like me, you go in and out of *Windows* several times each day, and sometimes you want *Adobe Type Manager* on and sometimes you want it off. But if you're out of the *Windows* environment and want to turn *ATM* off before you enter it again, forget about it! You have to load *Windows*, load the *ATM* control panel, turn off *ATM*, then exit and reenter *Windows*.

Luckily, I found a way to turn *ATM* on and off from outside *Windows*. The setting that governs *ATM*'s status is in an ASCII text file called ATM.INI, located in your WINDOWS subdirectory. To change the setting, load that file into any word processor or text editor and find the command 'ATM=On' or 'ATM=Off' under the [Settings] subheading. By changing this command, you can control whether *ATM* loads the next time you open *Windows*.

Howard Wexler
Westchester PC Users Group
New York

User group members—please submit your tips to User Group Tips, PC World, *501 Second St. #600, San Francisco, CA 94107; PC World Online, User Group Tips; CompuServe 74055, 412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Include your phone number and the name of your group. We pay $50 and throw in a* PC World *T-shirt for each tip we use.*

ANTHONY RUSSO

Seems like ev
missed the bu

NEC's unique local video bus lets you see graphics 200% faster.

The Image Series was designed to take advantage of NEC's new MultiSync FG monitor line, which includes our FullScan™ technology. It gives you edge-to-edge images in a much larger display area. Combine it with an Image Series PC and you'll not only see your information faster, you'll see more of it.

■ Looking to get to your graphics faster? Well, there's just one thing to do. ■ Catch the bus. ■ NEC's local ImageVideo™ bus. The only local video bus to come standard on a personal computer. Available on the PowerMate® SX/20i and the 386/33i, it's a dedicated path for video data that operates at the same speed as the processor. ■ So you can see your graphics at lightning speeds. More than twice as fast as our closest competitor. Pretty fast for a local bus, wouldn't you say? ■ But our local video bus is just one of many reasons why the Image™ Series personal computers are taking the computer world by storm. ■ There's also our unique, integrated motherboard. It has a microprocessor, state-of-the-art cache and expandable memory built in. That way, with a simple system board exchange you can easily upgrade to the next generation. ■ What's more, our Image Series personal computers are designed so that all

NEC POWERMATE 386/33

NEC POWERMATE SX/20

COMPAQ DESKPRO 486/33

IBM PS/2 9 486/25

AST BRAVO 486/2

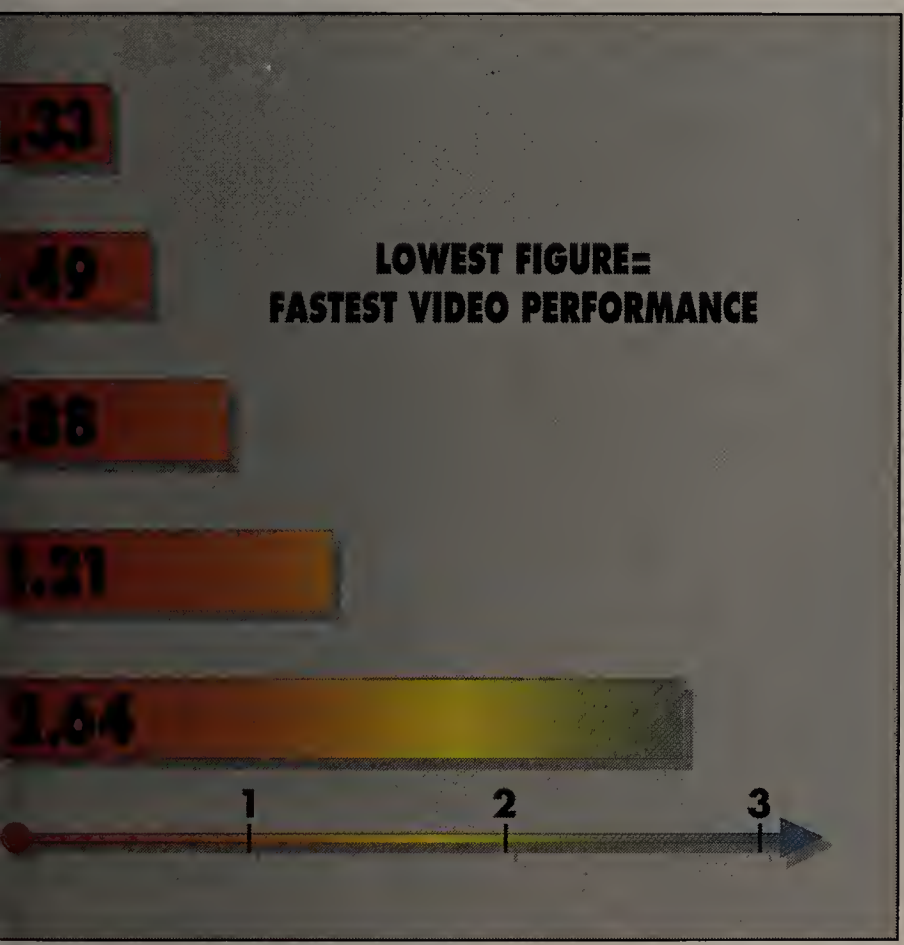
SECONDS

C&C
Computers and Communications

PowerMate and MultiSync are registered trademarks, and FG, Image, ImageVideo, FullScan and ImageSync are trademarks of NEC Technologies, Inc. All trademarks and registered trademarks are the property of their respective manufacturers. © 1992 NEC Technologies, Inc.

eryone else has s.

these pieces always work together with peak precision. ■ The PowerMate SX/20i and 386/33i also have 800 x 600 SuperVGA resolution that can expand to 1024 x 768 with 256 colors. Our proprietary ImageSync™ technology which automatically produces flicker-free graphics when used with NEC's new MultiSync® FG™ series monitors. SIMM sockets for easy and affordable memory upgradability. And FLASH-ROM for simple BIOS maintenance via diskette or network. ■ Even their modular design will impress you. It gives you easy access, so maintenance is effortless. For instance, to open the chassis, just turn the plastic thumb screw and the cover opens up instantly. ■ But what may just be the best part of the Image Series has nothing to do with the computers. And everything to do with the price. ■ Never before has so little gotten you so much. ■ If you'd like more information on our local video bus, or any of the Image Series personal computers (as if there isn't enough information in this ad), call us at 1-800-NEC-INFO or NEC FastFacts, at 1-800-366-0476, # IMAGE (46243). For those of you in Canada, call 1-800-343-4418. ■ Because if you miss our bus, you might not see another for a very long time.



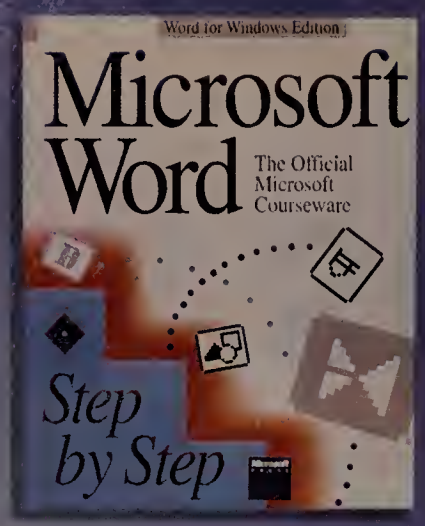
PC Magazine Labs (5.0)
Video Performance Test: Direct Screen Access

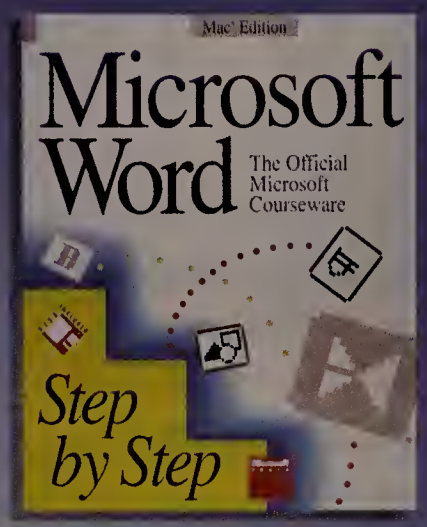
Because ↑ is the way you want to go. NEC

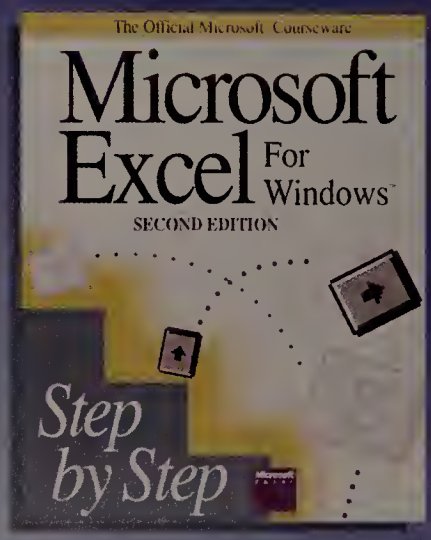
Test performed by
Computer Market Research, Ltd.

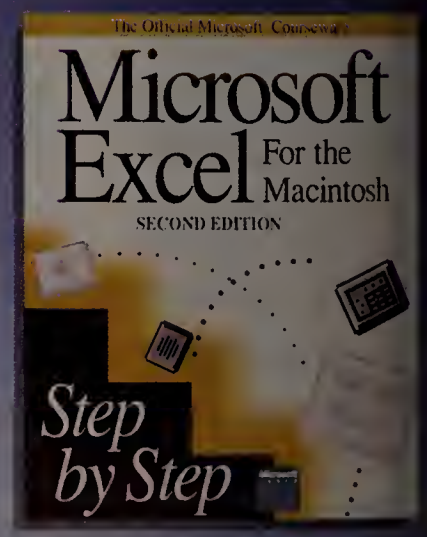
Circle 203 on reader service card

Step Up To Microsoft Press









Training.

Now you can do it yourself. At your own pace, at your own place. The *Step by Step* books from Microsoft Press make it easy. Learn what you need to know, when you need to know it. The *Step by Step* books come complete with examples on disk. Each lesson is modular and self-contained and takes only about 30 minutes to complete. And the *Step by Step* books have been developed and tested in the respected Microsoft® Usability Labs, so you know they're user friendly and accurate. Current books cover Microsoft Word for Windows™ version 2.0, Word for the Apple® Macintosh® version 5.0, and Microsoft Excel for Windows and the Apple Macintosh version 3.0. Each course is $29.95 and available at book and software stores everywhere or directly from Microsoft Press.

Microsoft Press

☎ *1-800-MSPRESS*

8AM to 5PM Central Time. Credit Card orders only. Please mention ad AWD.

Microsoft Press, One Microsoft Way, Redmond WA 98052-6399 ■ In Canada, call Macmillan Canada. 416-293-8141

Circle 166 on reader service card

STAR-DOT-STAR *.*

A global exchange of personal computer discoveries

Edited by Brett Glass

A Better One-a-Day Solution

These days, AUTOEXEC.BAT files are often loaded with programs to run disk checks, virus checks, and all sorts of other checks when their computers are switched on. Some people find this annoying, especially when they're rebooting in the middle of the day. To keep from being annoyed more than once a day, I wrote a program in BASIC called DT.BAS [see **LISTING 1**] that ensures my PC will do these routine checks only once a day.

A typical AUTOEXEC.BAT that uses the program is attached [see **LISTING 2**]. Every time the PC is switched on, the program compares the current date to the date in a file called TODAY. If the date has changed, i.e., if AUTOEXEC.BAT hasn't run today, my program will run another batch file, CHECK.BAT; this is where you put the commands to be run only once a day. DT.BAS, by the way, won't run properly if it can't find CHECK.BAT. When CHECK.BAT and DT.BAS are finished, AUTOEXEC.BAT updates the TODAY file to make sure the batch will run only once.

P. B. Mohandas
Manama, State of Bahrain

```
10 OPEN "O",#1,"C:\DT"
20 D$=DATE$
30 PRINT #1,D$
40 CLOSE
50 OPEN "I",#1,"C:\DT"
60 A$=INPUT$(8,#1)
70 ON ERROR GOTO 120
80 OPEN "I",#2,"C:\TODAY"
90 B$=INPUT$(8,#2)
100 IF A$=B$ THEN GOTO 130
110 CLOSE
120 SHELL "CHECK.BAT"
130 SYSTEM
```

LISTING 1: This BASIC program lets you run a batch file only once a day.

```
ECHO OFF
PATH=C:\DOS;C:\
PROMPT=$P$G
REM If you're running
REM DOS 5, use
REM QBASIC /RUN DT
REM instead of
REM the following line.
BASICA C:\DT
COPY C:\DT C:\TODAY
DEL C:\DT
CLS
```

LISTING 2: This AUTOEXEC.BAT fragment shows how to use DT.BAS (shown in LISTING 1) to run another batch file once a day.

Editor's note: This solution has an important advantage over others we've published in previous Star-Dot-Star *columns and on our PowerBase disks. Some other "one-a-day" schemes stopped working with the advent of DOS 5.0, but this one, because it uses a BASIC program, is more immune to changes in DOS. I've tested it with BASICA and QBASIC, and it runs well with both, meaning that whatever DOS version you have, you should be able to run this program.*

Screen Capture in dBASE and FoxPro

It's always possible to print the screen by pressing **<Print Screen>**, but what if you want to automate screen printing as part of a *dBASE* application? How do you press **<Print Screen>** in your code?

```
n prnscr.bin
a100
int 5
retf

rcx
3
w
q
```

LISTING 3: Run this script through DEBUG to create PRNSCR.BIN, which lets you print the screen from within a dBASE or FoxPro program.

I wrote PRNSCR.BIN [see **LISTING 3**] to do just that. You prepare *dBASE* or *FoxPro* to run PRNSCR with the command **LOAD prnscr**, which you can run in a program or at the dot prompt. You then use the command **CALL prnscr** whenever you want to print the screen.

Yi Jiang
Missoula, Montana

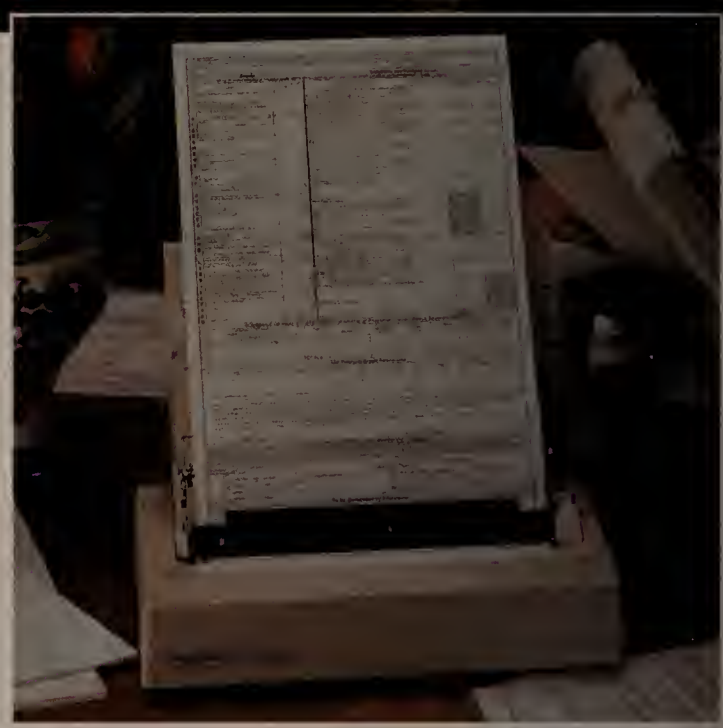
Editor's note: To create PRNSCR.BIN, copy **LISTING 3** *to an ASCII text file called PRNSCR.SCR, then type* **DEBUG < PRNSCR.SCR** *at the DOS prompt. PRNSCR.BIN will appear in the current directory.*

Seeing All Your Files

"File open" dialog boxes often give only a partial listing of a directory (e.g. '*.wri' for *Windows Write*, '*.pas' for *Turbo Pascal*, '*.txt' for *Windows Notepad*, and so on). I got tired of this, so I sat down with *The Norton Utilities*

MANNESMANN TALLY®

A Mannesmann and Siemens Company



The *Only* Portable Printer with *True* Business Performance!

Laser Performance Not Tied to the Desktop for Financial, Real Estate, Consulting, Sales, Remote Sites etc...

- HP LaserJet® II emulation - print documents in same laser format - download forms & special fonts in LaserJet II format - portrait & landscape - no need to carry bulky, preprinted forms **(offsite forms & contract printing)**.
- Document-grade, laser quality on plain paper or transparencies - 300 DPI **(mobile presentations/demonstrations)**.
- Desktop laser printer speed (6 PPM) in just 8.3 pounds!.
- Prints on letter, legal or A4 size papers.
- Built-in 80-page "snap-out" sheet feeder.
- Fully portable battery operation - charges from 110/120V AC, 220/240V AC, 12V DC **(international business printing)** .
- Durable, reliable technology under tough conditions - no toner or ink cartridges to spill or leak **(remote industrial/scientific printing)**.
- Worldwide Service & Support.

MT735

...Fast Portable Page Printing!

For the name of your nearest dealer call:

1-800-843-1347 Ext:459

Mannesmann Tally Corporation
Kent, Washington

BUYERS ASSURANCE SEAL INFO WORLD

A mannesmann *technology company*

Tally is a registered trademark of Mannesmann Tally Corporation.
HP and LaserJet are registered trademarks of Hewlett-Packard Corporation.

Circle 161 on reader service card

and changed the file specs in all my executable files to '*.*'. To do this, make a new copy of the file and search it for the undesirable extension. Type a * and two spaces after the period, and your directory listings will be full of files forever.

Daniel Woo
Huntsville, Alabama

Editor's note: This daring technique can be very useful for applications that default their file browsers to files with certain extensions. It doesn't work with everything, but it should work with a good many programs, including most Windows *accessories. However, it's recommended only for those who are bold enough to risk a system crash if something goes awry.*

If you're willing to take the chance, here's how to use The Norton Utilities 6.0 *Disk Editor to make the patch. We'll use the* Windows *Notepad as our sample application because its browser shows only files with the TXT exten-*

POWER TIP NO. 242

Editing Windows 3.0 Files

Optimizing *Windows 3.0's* performance generally involves modifying AUTOEXEC.BAT, CONFIG.SYS, WIN.INI, and SYSTEM.INI. Instead of using *Windows'* Notepad or your word processor to edit these files, use *Windows'* System Configuration Editor, SYSEDIT.EXE. To make things easy, create a Program Manager icon for launching SYSEDIT: Select *File New Program item OK*. Name the new item **System Editor,** and use the Browse button to locate SYSEDIT.EXE in the \WINDOWS\SYSTEM subdirectory.

Ron Chatman
New Orleans, Louisiana

Tied to Old Systems?

Rent from Genstar and Make Obsolescence Obsolete

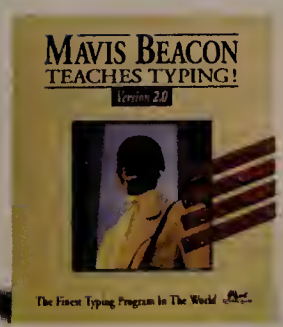
Save money *and* keep up-to-date with the latest PCs and peripherals from Compaq, IBM, Toshiba & Apple. Call to end obsolescence.

U.S. 1-800-422-3300
Canada 1-800-387-6646

GENSTAR RENTALS
What you need when you need it

PCs, Workstations & Electronic Test Equipment for Business

Why buyh a computer tham moves atthe
peed of light ifyou
ttype at thhe spseed of a snail$



Mavis Beacon Teaches Typing!® the world's best-selling typing program, puts the power of any computer at your fingertips. Then teaches you where to place those fingertips to instinctively maximize speed. And minimize errors. Without ever peeking at the keyboard.

All thanks to a unique tutorial feature not found in any other program.

So move quickly, or as quickly as your fingertips will presently allow, and punch 1-800-234-3088 to order.

©1991 The Software Toolworks, Inc Mavis Beacon Teaches Typing® is a registered trademark of the Software Toolworks, Inc

Circle 269 on reader service card

GO FIGURE!

DesignCAD 2D. Like Leonardo da Vinci's concept of a rotary blade aircraft, it is ahead of its time, not only in technology, but also in cost and value.

DesignCAD 2D is only $349, and it has more and better features than the other CAD programs that cost $3,000!

And, if you're ready for a three dimensional CAD program, there is the state-of-the-art DesignCAD 3D . . . for only $499!

So, how come theirs costs several thousand dollars and ours costs a couple hundred? Go figure. (Why do you think the Mona Lisa is smiling like that?)

Computer Shopper Best Buy of 1991 — CAD/CAM Software

PC MAGAZINE EDITORS' CHOICE

PC MAGAZINE EDITORS' CHOICE

Buyers Assurance

Your product designed with DesignCAD?
Let us know, and maybe we'll put it in one of our ads.

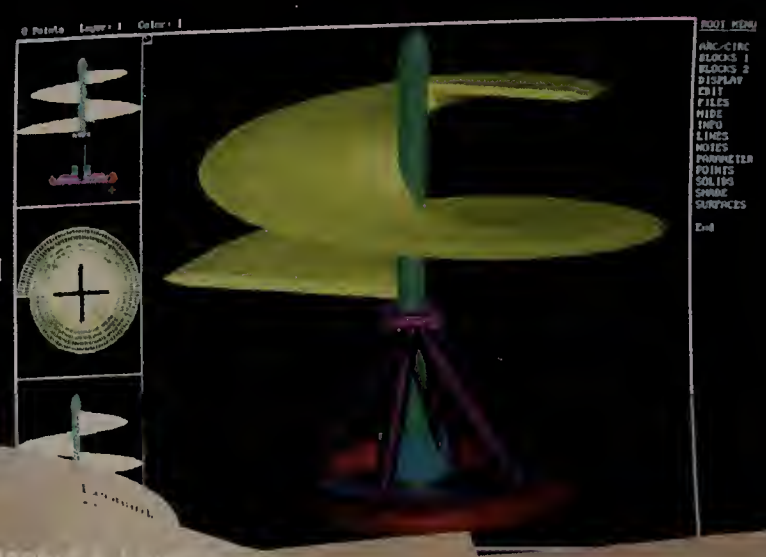
For a *free* demo disk
and 16 page color brochure,
contact:

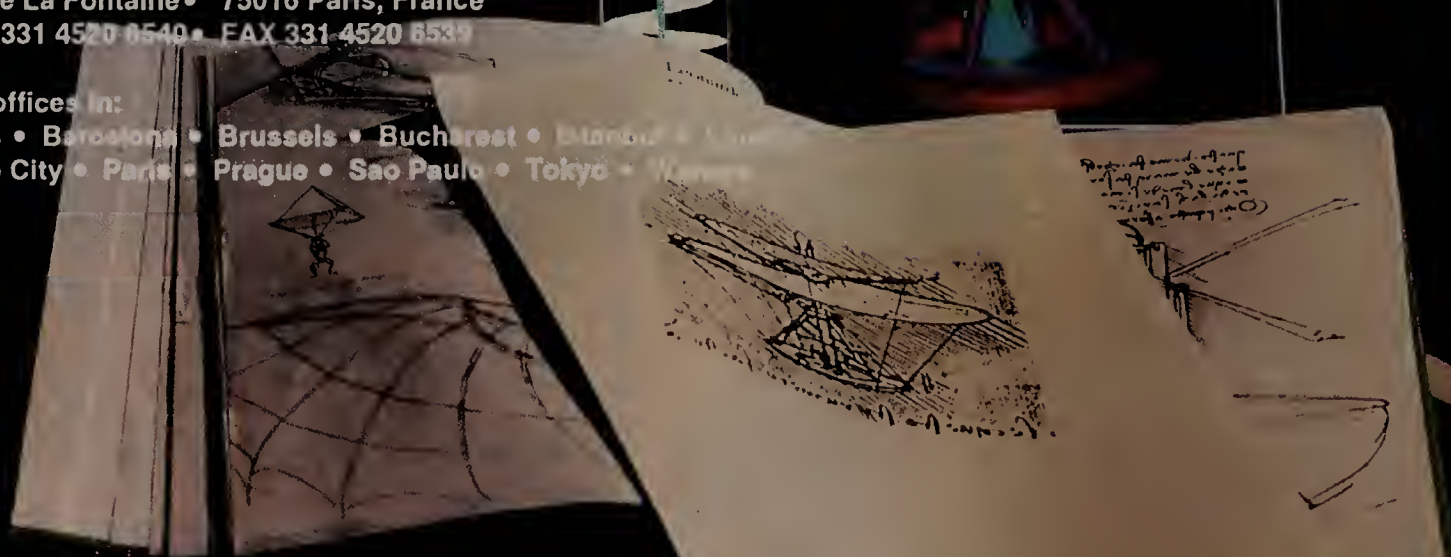
American

Small Business Computers, Inc.
One American Way • Pryor, Oklahoma 74361
(918) 825-4844 • FAX (918) 825-6359

European Headquarters:
102 Rue La Fontaine • 75016 Paris, France
Phone 331 4520 6540 • FAX 331 4520 6539

Other offices in:
Athens • Barcelona • Brussels • Bucharest • Istanbul • Lisbon
Mexico City • Paris • Prague • Sao Paulo • Tokyo • Warsaw





Also Available for Macinto

Circle 306 on reader service card

sion, and text files have many more extensions than that. You must be out of Windows *to make this change, because the Disk Editor won't—and shouldn't—run in a multitasking environment.*

First, make your WINDOWS directory the current one, and copy NOTEPAD.EXE to NEWNOTE.EXE in order to avoid losing the original program. Start the Disk Editor with the command **diskedit newnote.exe /w** *(depending on how you installed* Norton, *you may need to type* **de** *instead of 'diskedit'). The /W switch forces the editor to let you write changes to the file. If you've entered the command correctly, you'll find yourself in the* Norton *Disk Editor, with the file displayed in hexadecimal on the left and in ASCII on the right.*

Press **<Ctrl>-S** *to start a search, specify* ***.txt** *as your search string, and press* **<Enter>**. *Once the string is found, press* **<Right>** *to bring up the cursor, and* **<Tab>**, *if needed, to move it from the hex to the ASCII. Change the *.TXT to *.* , putting two spaces after the second star. (In some programs, you can also shorten the string by placing a zero byte after the second star. However, the spaces work just as well in virtually all programs, and they ensure compatibility.*

Next, press **<Ctrl>-G** *to confirm that you want to write to disk and to search for more occurrences of the pattern (in the case of Notepad, there will be one more). Finally, leave the disk editor by pressing* **<Ctrl>-Q**.

Back at the DOS prompt, type **win newnote** *to see what you've done. You should find that the default file search pattern in the program is now *.*. When you feel confident that the modified program works, rename the original to something like OLDNOTE.EXE, and rename the altered version NOTEPAD.EXE.*

It shouldn't happen with Notepad, but when you modify another program, you may find that rather than changing the default extension for the

Merritt™ COMPUTER PRODUCTS

Introducing The First Truly Intelligent Labeling System!

Someone finally figured out the perfect labeling system...

No more messy labels...no more scratched-out words, or curled and torn labels to stick in your disk drive. Now there's LABELIT™.

LABELIT™ consists of a set of peel-off adhesive label-holders made of transparent plastic and a series of individual label inserts, available in five colors. Once the label-holder is permanently affixed to your disk, all you have to do is write the necessary information on the label of your choice and slip it into the label-holder. It's simple and convenient.

Not too big, not too small... LABELIT™ fits all floppy disks just right. And LABELIT™ is also available for Mini and Maxi Data Cartridges, and VHS video cassettes.

Safety assured...LABELIT™ absolutely will not come off in your disk drive...it's even been lab tested and used by the world's largest computer companies.

LABELIT™ proves that in a very complicated world, there is still room for a very simple idea.

LABELIT™
THE INTELLIGENT LABELING SYSTEM

Dealer inquiries invited.

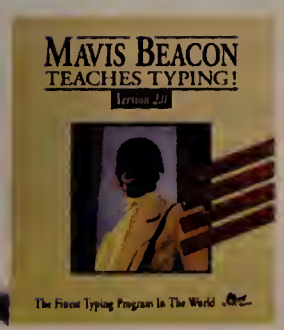
COMPUSA THE COMPUTER SUPERSTORE. BIZMART Computers • Software • Office Products COMPUTER CITY SUPERCENTER ComputerLand EXPRESS

Merritt Computer Products, Inc. • 5565 Red Bird Center Dr., Suite 150 • Dallas, Texas 75237 • (214) 339-0753

©1992, Merritt Computer Products, Inc.

Circle 217 on reader service card

Iff ths is thekind of information you're inputing onnn your new ocmputer, you need Mavis beaconn. fast.



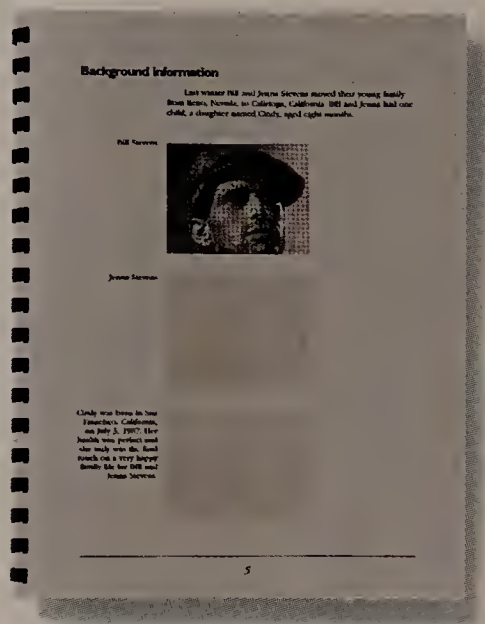
Mavis Beacon Teaches Typing!,® the world's best-selling typing program, uses Artificial Intelligence to 'learn' your weaknesses and determine the 'hot spots' or keys that need extra work. It then builds personalized lessons to improve your accuracy and speed in these problem areas.

So if you want to get the best out of your computer but your fingers keep getting in the way, visit your nearest dealer or call 1-800-234-3088 to order.

©1991 The Software Toolworks, Inc. Mavis Beacon Teaches Typing® is a registered trademark of the Software Toolworks, Inc.

Circle 269 on reader service card

ALDUS. THE BEST GRAPHICS
AND HERE ARE THE DO



But don't just take our word for it. Prove it to yourself. When you use any of our programs — Aldus FreeHand,® PageMaker,® Persuasion,® or PhotoStyler™ — you'll quickly discover two amazing things.

First, how easy and effortless they are to use.

Second, and more important, how incredible everything you do looks. What's more, Aldus FreeHand, PageMaker and Persuasion are file-compatible on Windows and Macintosh.

So whether you're creating a one-page sales sheet or a 20-page, four-color brochure, when it comes to providing graphic solutions, Aldus will help you create the documents to prove that the only limit is your imagination.

ALDUS PAGEMAKER

If you need a complete writing, design, and production tool for creating professional-quality publications, this is it.

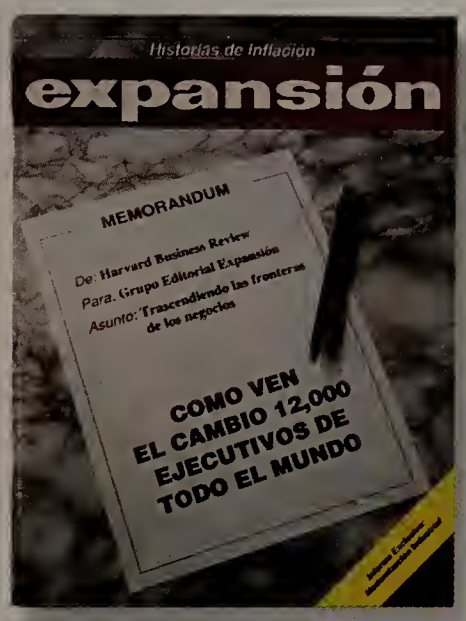
With its comprehensive, powerful electronic page-layout features, you can integrate text and graphics to create just about anything.

ALDUS FREEHAND

Aldus FreeHand is the most comprehensive design and illustration package for Windows.

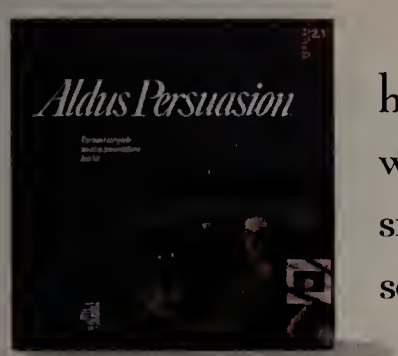
This ad was produced using Aldus PageMaker. Aldus, the Aldus logo, PageMaker, Aldus FreeHand, and Persuasion are registered trademarks of Aldus Corporation. PhotoStyler

PROGRAMS FOR WINDOWS.
CUMENTS TO PROVE IT.



It gives you a combination of flexible interface, powerful features, and superior output quality.

ALDUS PERSUASION



When it comes to helping you create a well designed, professional-looking presentation, who else but Aldus could make it look this good or this easy?

Persuasion turns your ideas into powerful, effective visual statements in no time.

It automatically formats your text into output for overhead transparencies or 35mm color slides.

ALDUS PHOTOSTYLER

Aldus PhotoStyler is the first professional-level color image-processing application that runs under Microsoft Windows 3.0.

It's perfect for graphic artists and color professionals who work on the PC.

For more information on the entire Aldus family of products, give us a call at 1-800-685-3581. You'll not only find that Aldus has the tools to meet your needs, you may discover just how far your imagination can take you.

ALDUS

of U-Lead Systems Inc. Windows is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer Inc. ©1992 Aldus Corporation. All rights reserved.

Circle 22 on reader service card

	A	B	C	D	E	F	G
1	Term of loan:	6 months			Amount of loan		10,000.00
2	Date of loan:		09-Mar-92				
3							
4	Payment	Pmts	Interest	Monthly	Paid as	Paid as	Balance
5	due on	left	rate	payment	interest	principal	remaining
6	09-Apr-92	6	10.00%	1,715.61	83.33	1,632.28	8,367.72
7	09-May-92	5	10.00%	1,715.61	69.73	1,645.88	6,721.84
8	09-Jun-92	4	10.00%	1,715.61	56.02	1,659.60	5,062.24
9	09-Jul-92	3	17.00%	1,735.45	71.72	1,663.73	3,398.51
10	09-Aug-92	2	17.00%	1,735.45	48.15	1,687.30	1,711.21
11	09-Sep-92	1	17.00%	1,735.45	24.24	1,711.21	0.00

FIGURE 1: This amortization table for a variable-rate loan was created using the @PMT function. The trick: the formula is applied as if the loan starts over each month.

"file open" box, you've unwittingly changed the extension used by a different part of the program. This will cause problems later. So if your change doesn't appear to have worked, revert immediately to the original version of the program. Finally, if your application program checks itself for modifications by viruses, beware: You may find that patching the code sets off a false alarm.

Waxing and Waning Interest in 1-2-3

Loans with variable interest rates can present problems if you're trying to create a table of payments in a spreadsheet. Many books show how to calculate payments for fixed-rate loans using *1-2-3*'s @PMT() function, but I looked through more than a dozen books on spreadsheets and basic accounting, and I couldn't find one technique for calculating variable-rate payments. So I developed my own.

The @PMT() function—found in most spreadsheets—takes the form @PMT(*principal, interest, term*), where *principal* is the amount of the loan, *interest* is the interest rate per period (usually per month or year), and *term* is the number of payment periods. But @PMT() doesn't take variable interest rates into account; it assumes that the payments remain constant. My solution is to use @PMT() to calculate different payments each month. This is the equivalent of assuming that the loan starts over again each month, with one less month in the term.

Here's a sample spreadsheet for a six-month loan [see **FIGURE 1**]. The first two rows include general information about the loan. Starting in row 6, column A lists each payment's due date, column B the number of payments remaining, and column C the interest rate. Columns D through G use assorted formulas to calculate each month's total payment, the interest and principal portions of that payment, and the remaining principal balance.

When you create this table yourself, be sure to fill in the correct formulas [see **TABLE 1**]. With a single exception, discussed at right, rows 8 through 11 of the worksheet contain the same formulas as row 7; once you have written the first seven rows, use */Copy* to copy A7..G7 to A8..G11.

The key to this worksheet is the series of @PMT() formulas in column D. Each one reads a different balance and a different interest rate, producing dynamic (and possibly depressing) monthly payments. As long as the interest rates remain the same, so do the payments. But change the interest rate for any one month, as we did for July (the previously mentioned exception to rows 8 through 11 being identical to row 7), and everything changes from that month on.

Column A shows a useful formula for listing dates that always land on the same day of the month. Basically, each formula adds 28, 29, 30, or 31 days to the date in another cell, usually the one above it.

You may find it necessary to add @ROUND() functions to certain formulas. This is especially true where a

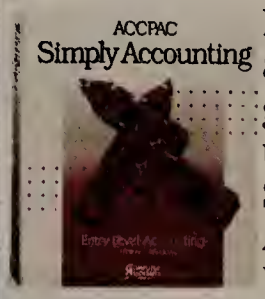
```
C2:  @DATEVALUE("3/9/92")
A6:  +C2+@CHOOSE(@MONTH(C2)-1,31,@IF(
     @MOD(@YEAR(C2),4)=0,29,28),31,
     30,31,30,31,31,30,31,30,31)
D6:  @PMT(G1,C6/12,B6)
E6:  +C6/12*G1
F6:  +D6-E6
G6:  +G1-F6
A7:  +A6+@CHOOSE(@MONTH(A6)-1,31,@IF(
     @MOD(@YEAR(A6),4)=0,29,28),31,
     30,31,30,31,31,30,31,30,31)
B7:  +B6-1
C7:  +C6
D7:  @PMT(G6,C7/12,B7)
E7:  +C7/12*G6
F7:  +D7-E7
G7:  @ROUND(G6-F7,2)
```

TABLE 1: Use these formulas in creating the spreadsheet in FIGURE 1. Note that while the formulas in cells A6 and A7 wrap to multiple lines here, each formula should be entered on a single line. The results in rows 8 through 11 are created by copying row 7.

Some People Are Born Accountants. For The Rest Of Us, There's New ACCPAC Simply Accounting For Windows.

Call 1-800-CALL CAI Today For Your Free Demo Disk.

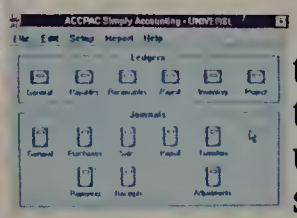
Easy To Learn, Easy To Use And Only $199.



Now there's an accounting program anybody can use—new ACCPAC® Simply Accounting™ For Windows,™ the quickest and easiest way to take care of your books.

MICROSOFT® WINDOWS™

You'll have it up and running in minutes. And with the Windows interface, you can do anything with just a few clicks of the mouse. Write a check. Print out an invoice. Do your payroll. Manage your receivables.



What used to take hours now takes just minutes. So you can spend less time counting your money—and more time making it.

And since it costs only $199, you can take care of your books without breaking the bank.

CA90s

CA's Computing Architecture For The 90s.

Call us today at 1-800-CALL CAI for the location of your nearest dealer.

It's the accounting program anybody can use.

And we mean anybody.

COMPUTER® ASSOCIATES

Software superior by design.

For Only $199 You'll Get: · General Ledger · Accounts Payable · Accounts Receivable · Payroll · Inventory Control · Job Costing · Prints Checks, Statements, Invoices and Mailing Labels · Produces Standard Accounting Reports · Quick Set-Up

© Computer Associates International, Inc., One Computer Associates Plaza, Islandia, NY 11788-7000. All product names referenced herein are trademarks of their respective companies.

Circle 29 on reader service card

How Can Northgate® Offer You A 386SX™/16 Color System Plus Expert Support For Only $1699?

Like Stonehenge, Some Phenomena May Never Be Explained.

Mankind has a long, fascinating history of combining ingenuity and dedication to building items that can only be described as phenomenal. Like Northgate's high-performance 386SX/16 system.

Created from the ground up, this modern wonder takes powerful 386SX performance to new levels with its impressive engineering, support and value. Take a look:

- 386SX/16MHz processor
- 2MB RAM; expands to 16MB
- 52MB IDE hard drive with 17ms seek time
- 1.2MB 5.25″ and 1.44MB 3.5″ floppy drives
- Space-saving 5-bay desktop case
- Six 16-bit expansion card slots
- 14″ SVGA monitor
- Exclusive *OmniKey*® keyboard
- MS-DOS® 5.0
- DiagSoft™ QA Plus™ system diagnostic/performance software
- FCC Class B Certified

But what's really phenomenal... you also get 24-hour 7-day-a-week toll-free technical support, a limited one year parts and labor warranty with on-site hardware service from NCR® (second and third year plans available), and overnight shipment of replacement parts at our expense during the

©Copyright Northgate Computer 1992. All rights reserved. Northgate, OmniKey and the Northgate 'N' logo are U.S. trademarks or registered U.S. trademarks of Northgate Computer Systems. 80386SX is a U.S. trademark of Intel. MS-DOS is a trademark of Microsoft Corporation. All other products and brand names are U.S. trademarks and registered U.S. trademarks of their respective companies. Specifications subject to change without notice. Northgate reserves the right to substitute components of equal or greater quality or performance. All items subject to availability. Offer good in the U.S. and Canada only. Prices shown are in U.S. dollars and do not include shipping and handling or appropriate sales taxes. We support the ethical use of software. To report

Rising up from Salisbury Plain in England, Stonehenge is a mystery. Theories about its creation include a primitive "duplication" of Roman architecture to an observatory for tracking the movement of stars. Even more intriguing is how the ancient craftsmen could move the massive blocks, stand them up and balance another stone on top of the pillars. And how were they able to perfectly align the stones so the sun would shine through particular columns during equinoxes? These mysteries may never be solved.

intel inside ™

warranty period. When coupled with our 30-day money back guarantee, it's clear you have nothing to lose. And a phenomenal computing solution to gain.

Northgate 386SX/16 $1699
*Lease as low as $62.86/per month**

Northgate 386SX/20 $1799
*Lease as low as $66.56/per month**

Call for a free Decision-Maker's Kit, complete pricing and custom configuration information.

800-345-0188

Major corporations, volume purchasers and government agencies call National Business Accounts: 800-345-0031

Charge it to your VISA, MasterCard, Discover, American Express or Northgate Big 'N' card.

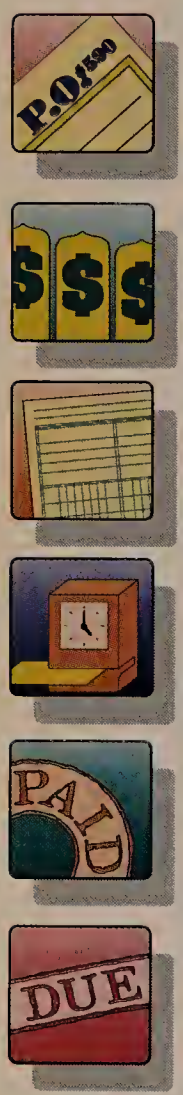
NORTHGATE COMPUTER SYSTEMS, INC.

7075 Flying Cloud Drive, Eden Prairie, MN 55344

CODE N3604

software copyright violations, call the Software Publishers Association's Anti-Piracy Hotline at 1-800-388-PIR8 *Monthly lease payments are based on a 36-month standard, fair market value, open-ended lease. 12-60 month leasing options available for qualified businesses

AccountMate®



We Think An Accounting Package Should Be Judged By The Way It Handles... Your Money!

Get the #1 Value that you deserve plus key features ranked tops in the industry by the "Guide to Accounting Software for Microcomputers":

✓ Easy Installation
✓ Easy Data Entry
✓ Speed

AccountMate offers twelve fully integrated modules including Inventory Control, Manufacturer's Inventory, Fund Accounting, Consolidated Ledger, Time & Billing, Contact Management, & Job Cost - all available in Source Code.

Call 800-877-8896 for a free demo disk, or write SourceMate at 20 Sunnyside Avenue, Mill Valley, CA 94941 for a free copy of the Smart Business Automation™ Product Catalog.
(415) 381-1011 Worldwide (415) 381-6902 Fax

SourceMate® Information Systems, Inc.
SMART BUSINESS AUTOMATION

Circle 258 on reader service card

formula might return 0.00. *1-2-3* may return a confusing -0.00 or 0.01; in a 30-year mortgage on a large loan, the odd penny difference can usually be ignored.

Before committing funds or signing a legal document, check with your bank or financial institution to see how they figure their variable-rate loans. Their figures and yours will probably differ slightly. One reason: Your bank will adjust your repayment schedule if you choose to make the first payment at a time other than exactly one month after the loan date.

James Kennedy,
St. Augustine, Florida

Dispatch Disks as You Diaper

The plastic containers used to hold Johnson & Johnson baby wipes are perfectly sized for storing 3½-inch floppies, with each container holding 30 to 35

POWER TIP NO. 243

Line Up dBASE III Plus Reports

dBASE III Plus report forms aren't very flexible, but there are a few tricks you can use to bend a report to your will. For instance, a semicolon inserts a hard return, which is handy if you want two or more fields to appear one above the other. For example, you might use **Lname + ";" + Rank** to produce:

Smith
Sergeant

You can combine this trick with the REPL() function, which repeats any character. For example, **Lname + ";" + Rank + ";" + REPL("–1", 20)** will put a 20-dash line below each name-and-rank pair.

Alan Schwartz
San Francisco

FREE Online Service

Join PC World Online for quick access to up-to-date information. Your first month's membership is free, and that includes 5 hours of online time. After that, **PC World Online** costs only $7.95 a month including two free hours of online time. Additional time is only 10 cents per minute.

Free Software

Download the latest utility and shareware files, chosen by *PC World* editors. Get free "Test Drives" of the latest commercial software products. Access *PC World* "Powerbase" files that bring you the best tips and utilities from ***PC World's*** How-To columns.

Talk with the Experts

Have a comment about something we've written? Want to express your own opinion? Want to communicate with ***PC World*** directly? Need easy access to ***PC World*** articles, reviews, product comparisons and more? Join us on **PC World Online.**

Get started today! Be part of PC World Online on America Online! Call 1-800-827-6364 ext. 5741 for your free America Online software kit.

PC WORLD ONLINE

Circle 207 on reader service card

PC WORLD

Instant Reference Card #23

For use with PC World Instant Reference Card Portfolio

BASICS: THE NORTON UTILITIES 6.0

You can invoke most of the utilities either by using the front-end menu or by typing the program file name at the DOS prompt. To use the menu, type **norton** and press **<Enter>** at the DOS prompt.

UNERASE

Unerase file in current subdirectory	Highlight file name, *UnErase*, type first letter of file name
Unerase file in another subdirectory	**F**ile•change di**R**ectory, select subdirectory, unerase file
Unerase all files in subdirectory	**F**ile•**G**roup•*OK*•*UnErase*•*Prompt for missing 1st letters*•*UnErase*, type first letter of each file in turn
Unerase file in erased subdirectory	Highlight erased subdirectory name, *UnErase*, type first letter of subdirectory name, change to subdirectory, unerase file
Unerase file in erased subdirectory when you don't know which subdirectory it was in or can't unerase the subdirectory	**S**earch•for **L**ost names, highlight file, *UnErase*, type first letter of file name
Unerase file when you're not sure of file name	**F**ile•view **A**ll directories, highlight recognized file, *UnErase*, type first letter of file name

Tip: To increase your chances of successfully unerasing a file, don't save or copy other files to your hard disk before running UnErase.

Fold Here

DISK DOCTOR (PROGRAM FILE NAME: NDD)

Test for errors in a disk's directory and file structure	*Diagnose Disk*, select drive(s), *Diagnose*. At Surface Test screen, *Cancel*
Test logical and physical integrity of hard or floppy disk(s)	*Diagnose Disk*, select drive(s), *Diagnose*. At Surface Test screen, *Begin Test*
Create on-screen report of test results	At Summary screen, *Report*
Print report of test results	Finish viewing on-screen report of test results, *Print*

Note: Testing a hard disk for physical defects is more time-consuming than logical testing is. However, it's good preventive maintenance, and you should do it weekly or monthly. Regular occurrence of physical defects may indicate serious disk problems. Make sure you back up your data.

SPEED DISK (PROGRAM FILE NAME: SPEEDISK)

Defragment disk	Select drive, *Optimize*
Change options	Select drive, *Configure*
Change optimization method	**O**ptimize•**O**ptimization Method, select method, **<Enter>**
Order subdirectories	**D**irectory order, select subdirectory, *Add*•*OK*
Sort files within each subdirectory when optimizing	**F**ile Sort, pick Sort Criteria and Sort Order, *OK*
Verify all data is being transferred properly	**O**ther options, *Read-after-Write*•*OK*
Save configuration	**C**onfigure•**S**ave options to disk
Show physical location of files on your disk	**I**nformation•**W**alk map, select block

Tip: Before running Speed Disk, disable any TSRs that may write to your hard disk. One way to do this is to boot from a bootable floppy disk with a streamlined AUTOEXEC.BAT file.

FILE FIND (PROGRAM FILE NAME: FILEFIND)

Find lost file using all or part of file name	Type file name, with or without wild cards, **<Enter>**
Find lost file by contents	Move to Containing field, type text string, **<Enter>**
Limit search to current directory and its subdirectories	*Current directory and below*•*Start*
Limit search to files created or modified before or after specific date	**<F4>**, *Date is after* and/or *Date is before*, enter date(s), **<Enter><Enter>**
Limit search to files of particular size	**<F4>**, *Size is greater than* and/or *Size is less than*, enter size(s), **<Enter><Enter>**
View ASCII version of found file	*View*
Exit File Find and change to found file's subdirectory	Highlight file, *Go To*

Tip: You may have more success finding data if you search using a keyword instead of a phrase. Some programs insert formatting symbols that might prevent File Find from finding a multiword phrase.

Fold Here

AUTOMATING

Note: You can add the following *Norton Utilities* commands to your AUTOEXEC.BAT file in order to run them automatically each time you boot your computer. To avoid typing the full path name before each command or having to change to your NORTON subdirectory, include your NORTON subdirectory in your AUTOEXEC.BAT file's PATH command, and make sure the PATH command precedes these commands.

Create copy of system area, making disk and file recovery more foolproof	**image**
Create protected area where deleted files are temporarily moved, making UnErase more foolproof	**ep /on**
Speed up system by creating disk cache	**ncache /install**
Prevent viruses or malfunctioning programs from writing to disk	**diskmon /protect+**
Create on-screen signal indicating drive access	**diskmon /light+**
Change keyboard to fastest rate	**ncc /fast**

Note: DOS 5.0's and *PC Tools'* MIRROR performs the same function as *The Norton Utilities'* IMAGE. If you currently use MIRROR, you can still use *Norton's* UnErase and Unformat. Just type the parameter **/mirror** after unerase or unformat in the menu or at the DOS prompt.

Tips: If you use Ncache or another disk cache, make sure DOS's FASTOPEN command isn't in your AUTOEXEC.BAT file. Along with its other features, Ncache performs the same functions as FASTOPEN, but more efficiently. You can save Norton Control Center (**ncc**) settings with **F**ile•**S**ave settings, then restore them by putting the command **ncc /set** in your AUTOEXEC.BAT file.

recycled paper contains 10% post-consumer waste

PC WORLD

Instant Reference Card #23

For use with PC World Instant Reference Card Portfolio

ADVANCED: THE NORTON UTILITIES 6.0

The Norton Utilities also allows you to access its utilities from the DOS prompt. This is faster than using the menu, but you have to remember the individual commands. To be able to access these commands from any subdirectory, include your NORTON subdirectory in your AUTOEXEC.BAT file's PATH command.

Note: If you selected the Alternate Names option when you installed *Norton*, the names of some of these commands may differ.

RECOVERY

Unerase deleted file	**unerase** [*path*\]*filename*
Unformat formatted disk	**unformat** *drive*:
Diagnose and repair directory and file structure errors	**ndd** *drive*: **/q**
Diagnose and repair directory, file structure, and physical surface errors	**ndd** *drive*: **/c**
Diagnose and repair *1-2-3*, *dBASE*, or *Symphony* file	**filefix** [*path*\]*filename*
Repair damage caused by DOS's RECOVER command	**disktool /dosrecover**
Mark possibly bad cluster to prevent future use	**disktool /markcluster**
Revive defective floppy	**disktool /revive**
Store hard-disk–saving information on floppy	**disktool /saverescue**
Save hard disk using above-mentioned floppy	**disktool /restore**

Tip: Because of its propensity for trashing data, you may want to remove DOS's RECOVER from your hard disk.

BATCH FILES

You can include the following Batch Enhancer commands in your batch files for added functionality.

Make speaker beep	**be beep**
Make text bright	**be sa bright**
Make text blink	**be sa blinking**
Make text red	**be sa red**
Change text to yellow and background to blue	**be sa yellow on blue**
Switch foreground and background colors	**be sa reverse**
Underline text (monochrome monitors only)	**be sa underline**
Return screen colors and attributes to normal	**be sa normal**
Pause for specified time (tick = 1/18 second)	**be delay** *ticks*
Pause execution of batch file until time specified (24-hour format)	**be trigger** *hh:mm*
Perform warm reboot	**be reboot**
Run Batch Enhancer script file	**be** *filename*

Note: You must have ANSI.SYS or its equivalent loaded through your CONFIG.SYS file to use Batch Enhancer to control attributes and colors. The colors you can use in BE SA commands are white, black, red, magenta, blue, green, cyan, and yellow.

A Batch Enhancer script file is an ASCII text file containing a list of 'BE' commands. No special extension is required, and 'BE' will find a script that's in the current directory or in a directory listed in your PATH command. Commands in a script file do not need the 'BE' prefix, and they will run much faster.

PRODUCTIVITY

Find lost file by name	**fl** *filename*
Find lost file by contents	**ts** "*data string*"
Quickly change directories	**ncd** *dirname*
Sort files in current directory by date and time	**ds dt**
Sort files in all the current drive's directories by name and extension	**ds ne \ /s**
Print ASCII text file	**lp** [*path*\]*filename*
Change file's date to today	**fd** [*path*\]*filename*
Change file's date to another date	**fd** [*path*\]*filename* **/d:***mm/dd/yy*
Safely format 360K floppy on drive A:	**sformat a: /a /360**
Quickly format 720K floppy on drive B:	**sformat b: /q /a /720**
Display information about system components and performance	**sysinfo /summary**

Tips: To find an individual file on your hard disk when you know its name, it's faster to use File Locate (**fl**) than File Find (**filefind**). You can also use Norton Change Directory (**ncd**) to make or remove subdirectories. But if you use DOS or another program for this, press **<F2>** next time you're in Norton Change Directory to alert it to your changes.

Fold Here

Fold Here

NDOS

NDOS, a replacement for COMMAND.COM, provides enhancements to many DOS commands, plus it gives new commands. To replace COMMAND.COM with NDOS, copy NDOS.* from your NORTON directory to your root, and place the line **shell=c:\ndos.com /p** in your CONFIG.SYS file.

Create long file description (up to 40 characters) to be displayed when using DIR	**describe filename** "*description*"
Display file with forward and backward paging and scrolling	**list** *filename*
Change both drive and directory	**cdd** *drive*:*directory*
Move file(s) to another directory	**move** *filename(s) directory*
Execute command in current directory and all its subdirectories	**global** *command*
Execute command on specified file(s)	**select** *command filename(s)*
Execute command except on specified file(s)	**except** *filename(s) command*
Display list of executed commands	**history**
Save log of commands to file	**log /on**
Save copy of current drive, directory, and environment	**setlocal**
Restore values saved with Setlocal	**endlocal**
Display total disk space, bytes used, and bytes free	**free** *drive*:
Display memory status	**memory**
Toggle system stopwatch on/off	**timer**

Note: You can also use many Batch Enhancer commands directly with NDOS.

Tip: You can test out most NDOS commands by simply typing **ndos** at the DOS prompt and pressing **<Enter>.** To return control to COMMAND.COM, type **exit** and press **<Enter>.**

For use with PC World Instant Reference Card Portfolio

disks. This is much cheaper than buying disk organizers costing anywhere from $4 to $8, and reusing this packaging eliminates plastic waste.

The containers are stackable, come in blue or white, and include an integrated lid that is permanently hinged. I recommend the unscented wipes, as the boxes are more pleasant to be around and the wipes are better for baby's bottom. Anyone who has or knows someone with an infant can inexpensively organize floppies, protect the environment, and keep babies clean and happy.

John C. Stilin
Houston, Texas

Editor's note: Incurring one of my most unusual business expenses, I bought a box of Johnson's Baby Wash Cloths (as they're properly called) to test this tip. The cloths cost about $3.50 for a tub of 84, and the tub does make an excellent disk storage container. Because the moist towels contain an emollient solution (which doesn't feel greasy, but might hurt floppies nonetheless), I recommend rinsing the tub thoroughly with soap and water before pressing it into service.

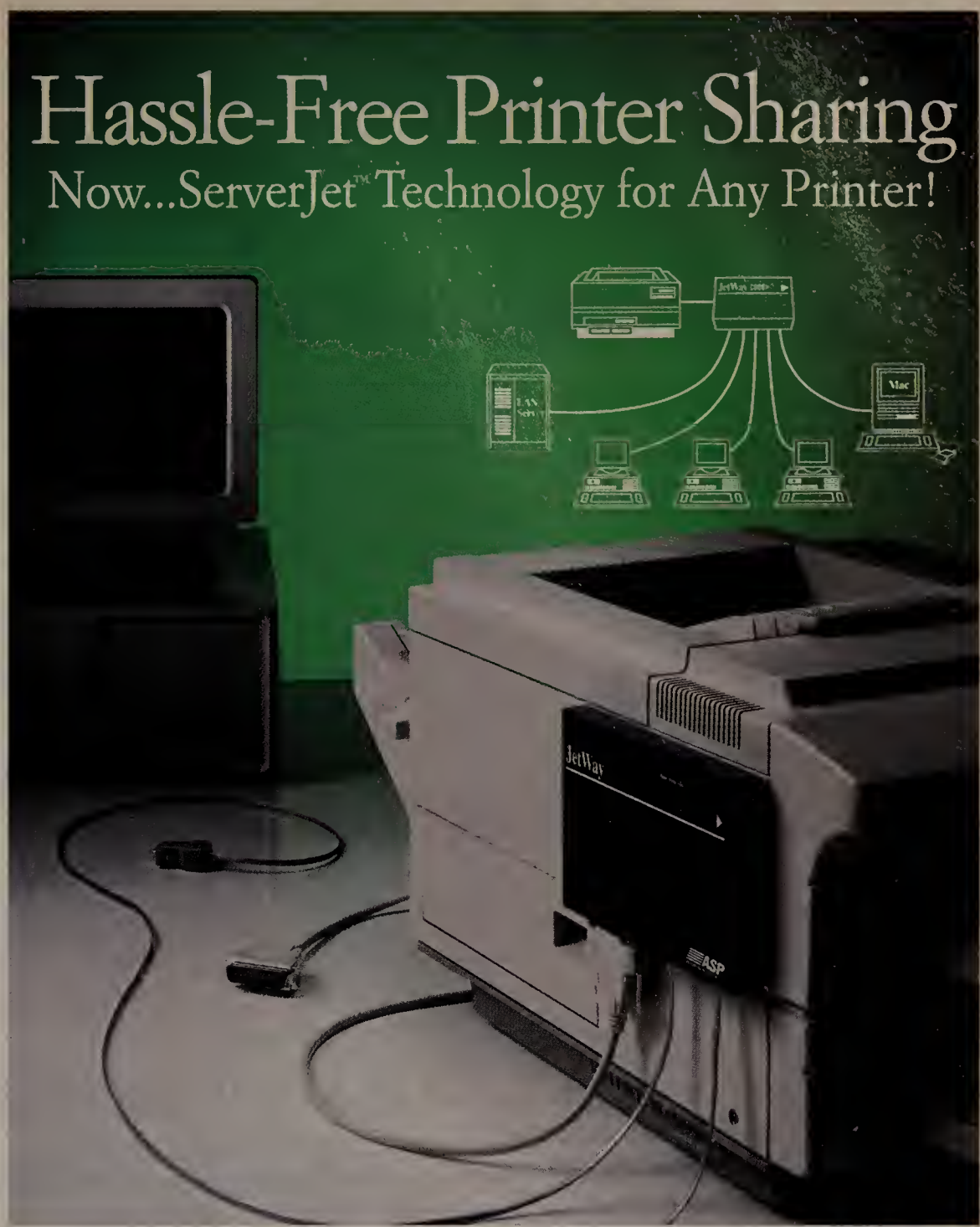
Also on the shelf were Kleenex Huggies, Scott Baby Fresh, and Longs (the local store) brands. Some looked promising, but others had tubs that were clearly narrower or shorter than Johnson's. If you'd like to use a different brand, try one tub for size before making a major investment.

Have a macro, batch file, short program, or general tip you're proud of? Star-Dot-Star *pays $25 to $200 per tip used. Send your tips to* Star-Dot-Star, PC World, *501 Second St. #600, San Francisco, CA 94107; PC World Online, Star-Dot-Star; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Sorry, we cannot acknowledge submitted materials.*

Brett Glass is a contributing editor for PC World.

Hassle-Free Printer Sharing

Now...ServerJet™ Technology for Any Printer!



You loved the features and compact size of our popular *ServerJet*, PC Magazine's "favorite solution for sharing LaserJets." But you need a solution that will work with any laser, dot matrix or other standard parallel printer.

It's called the *JetWay*.™

Stretch up to hundreds of feet of telephone-type cable from your PCs to the *JetWay*. Plug your printer cable into the *JetWay* and plug in the power cord. If you're tight for desktop work space, just slap the video cassette-sized *JetWay* onto the side of your printer.

Then, up to eight people can simultaneously *whoooooosh* documents to a printer at the "jet speed" of 115,200 baud – for less than $69 per user.

It's that easy. Here at ASP, we call it "hassle-free." We use it as an ingredient in all of our products.

No more wandering down the hall with diskette in hand.

Or borrowing someone else's printer.

Or wasting time waiting to print.

The *JetWay* is available in a variety of models with up to 4MB of buffer memory to spool your print jobs.

Take off with a *JetWay* and watch your productivity soar!

To order your *JetWay*, or for a **FREE** catalog of our full line of printer-sharing solutions, call ASP at:

800-445-6190
International 408-746-2965

ASP
ASP COMPUTER PRODUCTS, INC.

160 San Gabriel Drive, Sunnyvale, CA 94086, USA
Telephone: 408-746-2965 • Facsimile: 408-746-2803

JetWay and ServerJet are trademarks of ASP Computer Products, Inc. / LaserJet is a registered trademark of Hewlett-Packard Co.

Circle 43 on reader service card

SEE US AT COMDEX/SPRING '92 BOOTH #1462

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

HARDWARE

- Accessory Boards 295
- Bios Chip 295
- CD ROM 295
- Communications/Modems 295
- Computer/Systems 295
- Equipment Leasing 295
- Hard Drives 296
- Peripherals 296-297
- Tape Drives 297

MISCELLANEOUS

- Accessories 297
- Bar Coding 297-298
- Business Opportunities 299
- Catalogs 299
- Computer Insurance 299
- Data/Disk Conversion 299
- Disk Copy Service 299
- Disk Duplication Software 299
- Disks 299
- Slides 299
- Supplies 300

SOFTWARE

- Accounting 300
- Business Applications 300
- Church Applications 301
- Data Entry 301
- Educational 301
- Employment 301
- Entertainment/Games 301-302
- Financial 302
- Flow Charting 302
- Genealogy 302
- Graphics 303
- Health 303
- Inventory Control/Management 303
- Languages 303
- Mailing Programs 303
- Maintenance Management 303
- Manufacturing 304
- Medical 304
- Music 304
- Networking 304
- Point of Sale 304
- Public Domain/Shareware 304
- Real Estate 304-305
- Security 305
- Statistics 305
- Surveys 305
- Training 305
- Utilities 305

ADVERTISING SALES STAFF

Sandra Wade - *Catalog Manager*
Duane Hampson - *Eastern Account Manager*
Elizabeth Maffly - *Catalog Production Manager*

ADVERTISING RATES & INFORMATION

The *PC World Catalog* serves as a cost-effective monthly meeting place for advertisers and volume purchasers. *Our readers don't want to shop, they want to buy!* And your message can reach them in two formats—display or text. Both are arranged by product category for easy reference.

Display ads are sold by the column-inch (2-inch minimum). You must supply camera-ready type and artwork. Standard red is available as a second color.

Text ads are sold at a minimum three-time rate of $645 per issue for a total of $1,935. You supply copy. We set type.

For further information regarding the *Catalog*, space closings and material deadlines, please call Toll-Free 800/435-7766. Within California, call 800/435-7760.

PC World
501 Second Street
San Francisco, CA 94107

PcW PCW Communications, Inc.
An IDG Communications Publication

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

HARDWARE/ Accessory Boards

REMOTE ACCESS

Office & Home Computers
Network/Servers • Remote Booting

- Call-in & activate computer On or Off with touch-tone code.
- 1-10 Selectable rings with answer machine compatability.
- Increase security, Save energy, Extend hardware/disk life.
- Compatible w/all communications & remote control software.
- Additional Multi-Unit Remote Control options available.
- U.L. listed - FCC Registered - Fully Guaranteed.

$129.95+$4.00 S/H 24 Hour Ordering **1•800•266-1733 EXT. 140**

Vant Systems, Inc. 5210 Lewis Rd., Bldg. 8, Agoura Hills, CA 91301

Tel:(818) 706-1733 Fax:(818) 879-2643

CIRCLE 435 ON READER SERVICE CARD

Where does the small software developer or PC product manufacturer find new customers?

The PC WORLD CATALOG

800/435-7766
800/435-7760 (CA)

CD Rom

Visual Fantasies On CD-ROM!!!

450 + Megabytes of the Hottest Graphics Anywhere!

- **2,500+ VGA/SVGA Adult Files.**
- **Database & Viewer Included.**
- **Sizzling Photo-Quality Scenes for Every Fantasy!!!**

***** **Only 99.95** *****

Plus 3.00 Shipping & Handling. Must State 21 or Over.

CD ROM Software Specials!

RBBS In a Box	97	KGB World Facts	99
CIA World Facts	57	USA Wars: WW II	99
Terrorist Groups	99	Lang of the World	295
Toolwks Ref Lib	99	N. Am. Fax Book	199
Game Pack II	67	Programmer Rom	89

MC/VISA/AMEX, Ck/MO. 24 hrs/7 days.
PC CompoNet, Inc. 2060 Emery Ave., Suite 216
La Habra, CA 90631 Info: (310) 943-9878

(800) 524-3811

We Sell Only Latest Releases!

CIRCLE 402 ON READER SERVICE CARD

Computer Systems

COMPUTERS

BEST PRICE. BEST SERVICE. BEST QUALITY

386SX16	286-12
40MB VGA color	40MB VGA color
$1275	**$995**

NAME BRANDS FOR LESS Call For Items Not Listed

ALR	EVEREX	MAXTOR	SEAGATE
APPLE	IBM	MICROSOFT	SONY
AST	INTEL	MITSUBISHI	TOSHIBA
CONNER	IRWIN	NEC	WANGTEK
CYRIX	LOTUS	OKIDATA	ZENITH

MICRO BASE TO ORDER CALL TOLL FREE
800-345-4479 (408)727-6276 CA (408)727-7307 FAX

3000 Scott Blvd Suite 203 Santa Clara Ca 95054

CIRCLE 423 ON READER SERVICE CARD

Bios Chip

ROM BIOS Upgrades
AMI & PHOENIX & MR. BIOS.
Upgrade your IBM PC,XT,AT, or compatible, 386sx &386 also. Supports 2 user defined hard drives, expanded hard drive tables 101/102 KB, 360,720, 1.2 &1.44 floppies, Complete set-up In ROM, All Video, Windows 3.0. *ROM diagnostics: AMI 286&386. Reasonable prices & full 30 day money- back Guarantee! Don't Settle For Less-Call us.
ADVANCED SOFTWARE
4 1/2 Marlboro Road Suite 2R
Derry, NH 03038
800-835-2467 603-432-1532

AN AWARD BIOS CAN RECYCLE YOUR COMPUTER!

Add These Features:
Windows 3.0 Support
3.5" 1.44Mb Floppies
User-Definable IDE HDs
Call for FREE Catalog
KOMPUTERWERK
Authorized Distributor
Orders 800 423-3400
Technical (412) 782-0384

CIRCLE 478 ON READER SERVICE CARD

Communications/ Modems

USE YOUR PC'S MORE EFFECTIVELY!

- Extend the distance between Keyboard/Monitor and CPU up to 600 feet with: EXTENDER
- Connect 2 or 3 Keyboards and Monitors to 1 CPU with: COMPANION
- Control up to 8 PC File Servers with a single Keyboard and Monitor with: COMMANDER
- Boot up your PC by phone with: PHONEBOOT
- Reboot your PC File Servers by phone with: REBOOT

With these Quality Products from CYBEX your satisfaction is guaranteed.

Cybex Corporation
2800H Bob Wallace Ave. • Huntsville, AL 35805
(205) 534-0011 • FAX (205) 534-0010

CIRCLE 516 ON READER SERVICE CARD

IBM SPECIALS
IBM PCjr, CONVERTIBLE, and Older IBM PC Models: Full line of Accessories, Software and Upgrades for IBM models including: Memory Expansions, Serial & Parallel I/O, Modems, Hard Drives, Repair Service and Replacement Parts for the Older IBM PC, PC/XT and PC/AT. Call, Write, or FAX to get a FREE Catalog. (214) 276-8072 Dial our BBS for a Quick List
Computer Reset
Dept PW, Box 461782
Garland, TX 75046-1782
FAX & BBS (214) 272-7920

Equipment Leasing

100% Computer Equipment Financing

Strike your best deal with the vendor of your choice

EXAMPLE: 36 months $5,500 price $197/mo true lease

Call Mt. View Leasing for your best leasing options

800•676•2521

CIRCLE 401 ON READER SERVICE CARD

Place your ad in the
PC WORLD CATALOG
800/435-7766
800/435-7760 (CA)

CATALOG PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Hard Drives

BACKPACK IS TRANSPORTABLE.

Adding an easy-to-carry hard drive to your portable computer has never been easier! Backpack from Micro Solutions connects quickly to the parallel printer port of any PC compatible or portable – without interface cards or tools. Several computers can share one Backpack, so you can back up your work or take it home to another computer. Diskette and tape drive models are also available. Backpack. Don't leave home without one. Call today for more information.

backpack

MicroSolutions
Computer Products

See us at the North Hall, Booth #665 at COMDEX

132 W. Lincoln Hwy., DeKalb, IL 60115 815-756-3411 Fax 815-756-2928

CIRCLE 526 ON READER SERVICE CARD

Peripherals

9-Track Tape Subsystem

Now you can exchange data files between your IBM PC/XT/AT and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-Track tape. Unit can also be used for disk backup. Transfer rate is up to 4 megabytes per minute on PCs and compatibles. Subsystems include 7" or 10½" streaming tape drive, tape coupler card, cables and software.

QUALSTAR®
9621 Irondale Avenue
Chatsworth, CA 91311
Telephone: (818) 882-5822

CIRCLE 527 ON READER SERVICE CARD

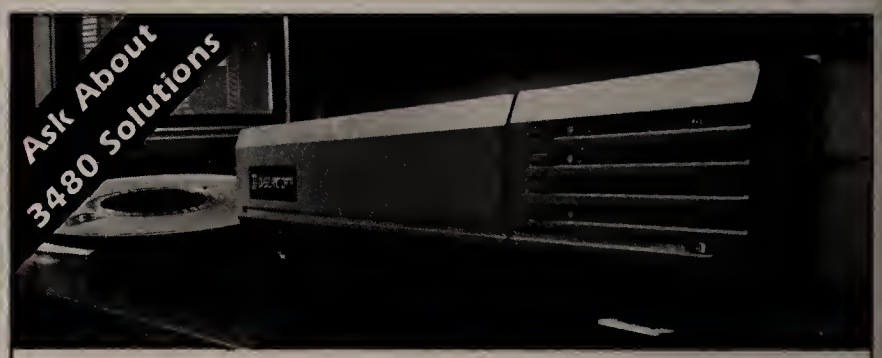
FREE MARKETING INFORMATION

Call your PC WORLD representative for actual response numbers our advertisers have received in your Category.

See how well the CATALOG performs.

CATALOG

800-435-7766
800-435-7760 in CA



9-Track Solutions for Today's PC Desktop

Come to Overland Data for modern PC 9-track solutions:

- Space-saving, low weight 1600 bpi subsystems with durability backed by a two year warranty.
- High capacity 6250 bpi subsystems with speed to match
- The latest software for data interchange and backup, with a friendly, intuitive interface
- OSSP, the most comprehensive customer support program in 9-track. It's the best insurance for your invesment.

We bring you state-of-the-art 9-track solutions for today's PC desktop. Because for the modern PC user, nothing less will do.

OVERLAND DATA.
San Diego, CA

1-800-PC9-TRAK
U.S. & CANADA

1-800-729-8725 • Bus. Phone: 1-619-571-5555 • FAX: 1-619-571-0982

CIRCLE 531 ON READER SERVICE CARD

***PC WORLD** subscribers are some of the most influential buyers in the market. 7 out of 10 subscribers are involved in the purchase decision process for PCs and peripherals, while almost 9 out of 10 are involved in the PC software purchase decision.*

Now that's a lot of purchase power. Call the PC WORLD CATALOG today! 800/435-7766 or 800/435-7760 (CA)

CATALOG PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Peripherals

Jet-Master™ Ink-Jet Printer Recharging System

- Very fast and easy.
- Save hundreds of dollars in jet-ink and cartridge costs.
- Kit is re-usable. Just buy more ink as needed.
- Print in black as well as other brilliant colors: brown, bright red, green, blue, purple, and orange.
- Precisely graduated ink dispenser for optimum dosage and maximum savings.
- Clean operation
- Most ink-jet printers supported.

Computer Friends, Inc.
14250 NW Science Park Drive
Portland, OR 97229
tel. (503) 626-2291 Order 1-800-547-3303

CIRCLE 483 ON READER SERVICE CARD

MAINFRAME 9-TRACK for MICRO's

6250
3200
1600
800

Fastest, Most Reliable Drives made for Micro's

800/842-0708
TDX PERIPHERALS
HAUPPAUGE, NY • 516/273-5900

CIRCLE 513 ON READER SERVICE CARD

Tape Drives

TWO COMPUTERS CAN SHARE ONE BACKPACK.

With Backpack, several computers can share a single tape drive. Backpack connects quickly and easily to the parallel printer port of any PC compatible or portable—without interface cards or tools! The Backpack tape drive is also easy to transport, making it ideal for transferring data from one computer to another. QIC 40 (40/120MB) and QIC 80 (80/250) tape, diskette and hard drive models are available. So share and share alike! Call today for more information.

backpack
MicroSolutions Computer Products

See us at the North Hall, Booth #665 at COMDEX
132 W. Lincoln Hwy., DeKalb, IL 60115 815-756-3411 Fax 815-756-2928

CIRCLE 536 ON READER SERVICE CARD

MISCELLANEOUS/ Accessories

Mouse Pads

Custom Printing Available.
Cloth: 13 Colors

Size:	8 x 7 ¼	8 x 9 ½	8 ½ x 11
12 Pads	3.25	3.50	3.75
72	3.00	3.25	3.50
144	2.85	3.00	3.25

PLASTIC: Blue, Platinum, Gray, Red & Black. Size: 8 ½ x 11.

12 Pads	6.50	36	6.00
72	5.75	144	5.25

ASK US ABOUT OUR WRIST RESCUE!
Precision Line Inc.
14505 21st Ave. No. Ste. 206
Plymouth, MN 55447
612-475-3550, 1-800-328-0077

FREE GLOBAL CATALOG

164 page guide to computer furniture, supplies and accessories
Dial Toll-Free 1-800-8-GLOBAL
GLOBAL COMPUTER SUPPLIES
11 Harbor Park Dr., Dept 91 PCW
Port Washington, NY 11050

CIRCLE 508 ON READER SERVICE CARD

CUSTOM KEY CAPS

IBM®, Macintosh®, Key Tronic®, Cherry®, & More

- **Key imprinting** to your color specs
- **Keytop Labels** for most popular software
- **Templates** for most popular software
- **Custom Templates** to your specs
- **Custom Labels** to your specs
- **Relegendable Keys**—IBM®, Cherry®, Key Tronic®, Wyse®
- **Flexshield™ Keyboard Protectors**

Express Turn-around services on Custom!

Call for your FREE CATALOG!
Toll Free 800 937-1337
602 634-7515 • FAX: 602 634-4620
Hooleon CORPORATION P.O.B. 230, Dept. PCWD Cornville, AZ 86325

CIRCLE 410 ON READER SERVICE CARD

Bar Coding

ITS BAR CODE READERS

MORE FEATURES MORE AFFORDABLE

NEW IMPROVED

Starting at $279 with wand! • Transparent operation. • No software required • PC, XT, AT, Mac, PS2, others. Look into our our full line of reliable, competitively priced readers, keyboard and serial wedges, portable data collectors, multi-drop readers, wands, laser scanners, mag stripe readers, and bar code printing software • OEM and reseller discounts. We provide solutions to systems! Custom application software for Data Collections available. Call for details.

INTERNATIONAL TECHNOLOGIES & SYSTEMS CORP. ITS
655-K North Berry St., Brea, CA 92621
(714) 990-1880 • FAX (714) 990-2503
13 Welwyn Ct., Richmond, VA 23229
(804) 741-6725

CIRCLE 501 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Bar Coding

EZBarcode® Readers for PC, PS/2, Terminals

- *Five* year warranty — the best in the industry
- Free bar code printing utility included
- Installs in minutes — no drivers or software changes necessary
- Autodiscriminating—reads all standard symbologies
- In stock, fast shipping
- 30-day money back guarantee

$289 with rugged plastic wand

with stainless steel wand $349

track I mag stripe reader.. *add* $100

with laser scanner $1385

with 3" CCD scanner $885

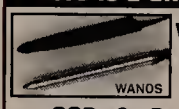
RS-232 serial version... *add* $30

Also available: Portable bar code readers and bar code printing software

TimeKeeping Systems, Inc.

1306-B East 55th Street • Cleveland, OH 44103
(216) 361-9995 • FAX: (216) 361-0030

BAR CODE READERS
There is a difference: *PRICE!*



Wand & Decoder $179

CCD & Decoder $495

Laser & Decoder $995

AGGRESSIVE PRICING! Reseller discounts. User software-transparent keyboard emulation wedges for PC's, clones, PS/2 and Macintosh. Bar code slotreaders, magnetic stripe. RS-232 versions. Printing Software. 30-day money back.

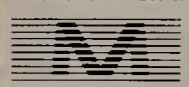
DATA HUNTER
6181 Medford, Huntington Beach, CA 92647
714-892-5461 Fax 714-892-9768

CIRCLE 417 ON READER SERVICE CARD

VARIANT MICROSYSTEMS
BAR CODE READERS DELIVER

WAND/ LASER/ MAGNETIC CARD CONNECTIVITY

- Keyboard wedges (Internal/External) for IBM PC/XT/AT,PS/2 and portables.
- RS232 wedges for WYSE, Link, Kimtron terminals
- Autodiscriminate between codes 3 of 9, UPC, EAN,12 OF 5, Codeabar, Code 128
- Interface with wands, Symbol Technologies, Metrologic and Photographic Sciences lasers
- Bar code and label printing software
- Full two year warranty
- **30 Day Money Back Guarantee**
- **Extensive VAR/Dealer Discounts**



VARIANT MICROSYSTEMS
3140 De La Cruz Blvd.
Suite 200
Santa Clara, CA 95054
Phone (408) 980-1880
Fax (415) 623-1372

CIRCLE 468 ON READER SERVICE CARD

Bar Code Reader for PC, XT and AT — $295

- Reads all popular bar codes
- Rugged aluminum housing
- No software/hardware modifications
- Stainless-steel wand
- 2-Year Warranty (one year for wand)
- MS-DOS Bar Code Print Software $150
- Works with any program or operating system
- Withstands 6ft. Drop to Concrete

Portable Bar Code Reader for PC or Macintosh — $645

- 36-Key Alphanumeric Key-Pad
- 32K RAM expandable to over 1 Meg
- Easily programmable screen prompts
- Complete with Hewlett-Packard wand
- Data stored in ASCII Text Format
- Communications Software and Cable Included

TPS Electronics

800-526-5920
Call Toll-Free U.S. & Canada
FAX: 415-856-3843

All TPS products carry 30-Day Money-Back Guarantee

MasterCard VISA AMERICAN EXPRESS

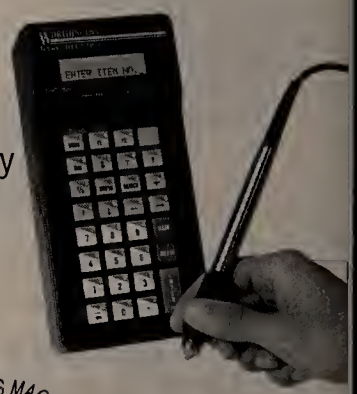
4047 Transport Street, Palo Alto, CA 94303 Phone: 415-856-6833

CIRCLE 522 ON READER SERVICE CARD

LABELING SOFTWARE

- **For Epson, Oki, IBM, and LaserJet**
- Flexible design. Any Format or size.
- On-Screen Label Design, WYSIWYG
- 16 text sizes — 3" reads at 100'
- Bar codes: 2of5, 128, UPC/EAN AIAG, MIL-STD, ZIP+4, & Code 39
- Auto-incrementing. File input.
- Logos, symbols — from scanners.
- Reversals, color, soft fonts.
- Powerful, Versatile, Fast, Easy!
- Rotatable, shadable, scalable fonts from 1" to 13" on LaserJet III
- Above label printed with LabelRIGHT™ — **$279**
- Other menu driven programs from **$129**. SCO/UNIX — **$199**

Portable Readers



- Battery operated reader
- Simple, powerful, 64 or 256K memory
- Bar code or keyed input
- Codabar, 2of5, UPC/EAN, Code 39
- Easily programmable prompts
- RS-232 or keyboard models
- Doubles as non-portable reader
- Wand or laser input
- Complete 64K units — **$799**

Bar Code Readers
for PC, XT, AT, PS/2, Mac and all RS-232 Terminals

FLEXLINES MAGAZINE "Outstanding Price And Performance"

- Attaches as 2nd keyboard
- No software changes needed
- 2of5, UPC/EAN, 128, MSI, Code 39
- Magstripe, laser, or wand input
- Complete with steel wand — **$399**

2 Yr. Warranty on Readers Direct from manufacturer 30 day $ back guarantee!

WORTHINGTON
DATA SOLUTIONS
417 Ingalls Street
Santa Cruz, CA 95060

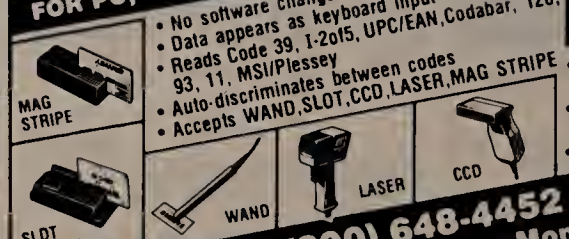
408-458-9938
800-345-4220

BAR CODE READERS
AMERICAN MICROSYSTEMS
2190 A Regal Pkwy. • Euless, Texas 76040 • (817) 571-9015

VISA AM EX MasterCard

FOR PC, XT, AT, PS/2 & TERMINALS:

- No software changes required
- Data appears as keyboard input
- Reads Code 39, I-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey
- Auto-discriminates between codes
- Accepts WAND, SLOT, CCD, LASER, MAG STRIPE



BAR CODE PRINTING SOFTWARE:

- For Epson, OKI, IBM, Dot Matrix and HP LaserJet Printers.
- Prints Code 39, I-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey
- Easy To Use

(800) 648-4452 • FAX: (817) 685-6232
30 Day Money Back Guarantee
One Year Warranty

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Business Opportunities

Own a Billing Service!
Great part time PC based business. Provide invoicing and accounts receivable services to small businesses. $500-$5000 income monthly. $289 for complete set-up incl: Software, proven marketing plan, promotional materials, and ongoing support.
Bluejay Systems
2579 Clematis Street
Sarasota, FL 34239
(813) 365-3357

What's Up for You at PC WORLD?

× ***Circulation is up***
1992 Rate Base: 620,000 - an increase of 70,000

× ***Editorial coverage***
More editorial on business products attracts more business PC buyers.

× ***Managerial readers***
73% of PC WORLD subsribers are managers proficient with PCs.

× ***Reader response***
Reader response levels are up 37%

Computer Insurance

SAFEWARE
Insures your computer. Full replacement of hardware, media & purchased software. As low as $49 yearly. Covers theft, fire, accidental damage and more—even power surges! One phone call does it all! Call for immediate coverage or information.
1-800-848-3469
SAFEWARE, The Insurance Agency Inc.
2929 N. High St., PO Box 02211
Columbus, OH 43202
Local (614) 262-0559

Data/Disk Conversion

RGA DATA CONVERSION CENTER

Tape, disks, micros, minis, mainframes, word processors, typesetting, and more...

- Database Management
- IBM 4381 on premises
- Conversions to/from all systems
- Hundreds of conversion programs
- Keying, labels & laser letters
- Carrier route & Qualifications

(212) 779-7667
Ralph Garner Associates, Inc.
99 Madison Avenue, New York, NY 10016
Professional services since 1967

CIRCLE 511 ON READER SERVICE CARD

We transfer files between incompatible computers. Thousands of formats supported among dedicated word processors, DOS, DEC VAX, UNIX, XENIX, Apple and Macintosh.

- **Cartridge tapes (Incl. TK-50, TK-70)**
- **9-track tape (800 to 6250BPI)**
- **3.5", 5.25", 8" floppy disks and Syquest**

For cost effective, quality conversions, call
Disk Interchange Service Co.
2 Park Drive • Westford, MA 01886
(508) 692-0050

CIRCLE 525 ON READER SERVICE CARD

DATA CONVERSION

If you want the most complete conversion services in the industry, just call...

(800) CONVERT

Capabilities include over 3000 formats.

PIVAR COMPUTING SERVICES, inc.®
165 Arlington Heights Rd. #W
Buffalo Grove, IL 60089
(708) 459-6010

Disk Copy Service

DUPLICATION FROM $.59 HIGHEST QUALITY MEDIA

MSDOS duplication from $.59(5.25") and $.86(3.5"). Prices go even lower as you continue to order!

- Duplication + 100% Verification
- Custom Labels/Sleeves/Mailers
- Custom Packaging & Assembly
- Colored Media Available
- Special Rates For Demo Software & Site Licensing
- Educational Discounts Available
- 24 Hour Turn-Around
- Guaranteed Products

800-255-3142
Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 422 ON READER SERVICE CARD

Duplication Services

Providing the highest quality disk duplication through state-of-the-art equipment, quality media and attention to detail:

- **All 3.5" & 5.25" Formats**
- **100% Verification**
- **Label Print & Assembly**
- **NO Minimums per run**
- **24 Hour Turn-Around**
- **Customized Services**

Duplication Services Corporation
Scottsdale, Arizona
(800) 322-8392 or (602) 451-4648

Disk Duplication Software

DISK DUPLICATION EQUIPMENT

Are you still duplicating disks manually or having them sent outside? Save time and money with Trace Mountain automated disk copiers.

- Supports all formats
- Copy up to 260 disks/hr.
- Stack & Duplicate up to 150 disks unattended
- Systems starting at under $3,000
- Manual software available for $49.95

Advanced World Products
44106 Old Warm Springs Blvd.
Fremont, CA 94538
(510) 226-9062 • (510) 226-9144 Fax

Trace Mountain
Authorized Distributor

CIRCLE 592 ON READER SERVICE CARD

Disks

FORMATTED DISKETTES BASF, VERBATIM, SONY

WITH FORMAT	QTY 250 MIX & MATCH	WITHOUT FORMAT
$.44	5.25" DS/DD	$.39
$.66	5.25" DS/HD	$.56
$.63	3.50" DS/DD	$.53
$1.09	3.50" DS/HD	$.99

- **FREE FORMATTING** on First Order
- **TYVEC SLEEVES** & Labels Included
- **COLORED MEDIA** Please Add $.05
- **PRIVATE LABELING** Available
- **SAME DAY** Shipping
- **MONEY BACK GUARANTEE**

800-255-3142
Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 448 ON READER SERVICE CARD

DATA CARTRIDGES BASF • SONY

TAPE & SIZE	QUANTITY 5+	10+	25+
DC 2000 (40MB)	14.25	13.75	13.50
DC 2080 (80MB)	17.00	16.50	16.25
DC 2120 (120MB)	19.50	19.00	18.75
DC 300XLP (45MB)	18.00	17.50	17.25
DC 600A (60MB)	19.50	18.75	18.25
DC 6150 (150MB)	20.75	20.00	19.50
DC 6250 (250MB)	25.50	24.75	24.00

- **25+ PRICING** on First Order
- **SAME DAY** Shipping
- **MONEY BACK GUARANTEE**

800-255-3142
Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 414 ON READER SERVICE CARD

Slides

SLIDE OUTPUT Mac/PC FROM $3

Solitaire® film recorder, slide dupes, overheads, large format. 24 hour BBS. Over 100 programs supported.

Elegant Graphics
750 Princeton, P.O. Box 774607
Steamboat Springs, CO 80477
(303) 879-4334, BBS 879-5210

CIRCLE 491 ON READER SERVICE CARD

CATALOG PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Supplies

HI TEC HYGIENE

Clean and Protect your computer with **DATA FACE™** CRT Cleaner & Anti-Static **SPEAK EAZZY™** Telephone Fragrance & Cleanser. Remove the dirt and germs with a little zing to your business and home telephones.

— ORDER DIRECT —

DATA FACE -

$7.95 ____ Each QTY. $83.67 ____ Case (12) QTY. $ _____

SPEAK EAZZY -

$6.45 ____ Each QTY. $67.80 ____ Case (12) QTY. $ _____

ENCLOSE ADDRESS SHIPPING ____ FREE

PAYMENT: TOTAL $ _____

Check ____ VISA/MC ____ Corp. P.O. ____

Card # _____

Exp. Date _____

Sign. _____

SCENT:

____ PEPPERMINT
____ BUBBLE GUM
____ MOUNTAIN
____ JASMINE
____ TANGERINE

Erin-American L T D.
Ft. Harrison Industrial Park
Terre Haute, IN 47804

CIRCLE 416 ON READER SERVICE CARD

Two Color ads increase response by 41%

SOFTWARE/ Accounting

DATASMITH™ Payroll

VERSATILE 1991 W-2'S! Supports all 14 Box 17 codes and Form Continuations, 1-up & 2-up forms, Prints Postal Permits. Restart preserves subtotals. Single-form reprint, laser and magnetic media forms, EIC, SDI/SUI, "reporting only" items, more. Order full specs & demo today!
LPI Information Systems
10020 Fontana
Overland Park, KS 66207
913/381-9118

EZ-Biller™ ONLY $49.95

The POWERFUL, EZ Solution
PRODUCT & SERVICE INVOICES

* Packing Lists * Back Order Rpt
* Inventory * Product Catalog
* Payments * Credit Memos
* Sales Journal * Tax Reports
* Accts Recv. * Statements
* Customer Labels * FREE SUPPORT

30 DAY MONEY BACK GUARANTEE!
Customizing as low as $75.00
Blue Chips Inc (201) 943-3715
570 Grand Ave-Ridgefield, NJ 07657

THE GENERAL STORE

Retail Store Management

The complete software system for Retail. Multiuser/Network ready. Supports cash drawers, barcode, receipt printers, customer displays, scales and online credit card authorization. Controls all types of retail stores. Multistore, size-color matrix, parts explosion and serialized items. Field proven in thousands of installations. Turnkey hardware & software systems.

ACCOUNTS RECEIVABLE
INVENTORY CONTROL
POINT OF SALE
ACCOUNTS PAYABLE
GENERAL LEDGER
MAILING LIST
• HARDGOODS
• APPAREL

$995 Complete system
Dealer inquires invited.

CRICHLOW DATA SCIENCES
804-523-6600 Fax 523-4668

CIRCLE 532 ON READER SERVICE CARD

What do more than 1400 Government and Nonprofit Organizations Know?

When You Need Fund Accounting Software... You Need American Fundware.

American Fundware provides powerful software solutions – written specifically for the government and nonprofit sectors – that solve your fund accounting needs. Easy to Learn. Easy to Use. Easy to Produce Results.

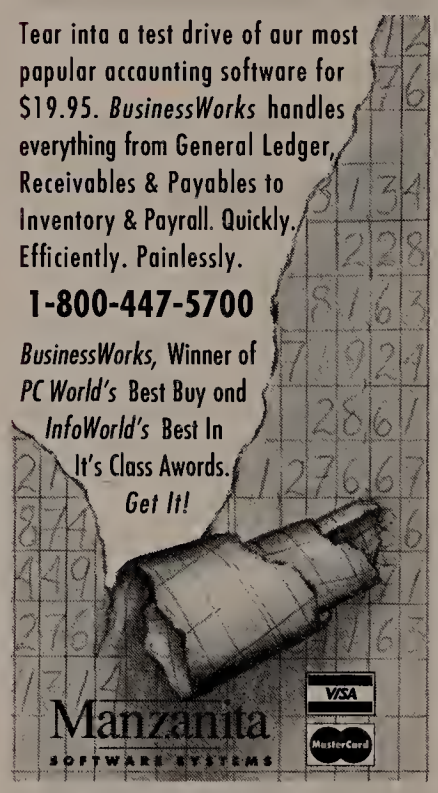
CALL AMERICAN FUNDWARE TODAY.
1-800-551-4458 or Fax: 1-303-879-6850
P.O. Box 773028, Steamboat Springs, CO 80477

CIRCLE 502 ON READER SERVICE CARD

Tear into a test drive of our most popular accounting software for $19.95. *BusinessWorks* handles everything from General Ledger, Receivables & Payables to Inventory & Payroll. Quickly. Efficiently. Painlessly.

1-800-447-5700

BusinessWorks, Winner of *PC World's* Best Buy and *InfoWorld's* Best In It's Class Awards. *Get It!*



CIRCLE 451 ON READER SERVICE CARD

dBASE Business Tools

- General Ledger
- Accounts Payable
- dInvoicer & A/R
- Sales Analysis
- Order Entry
- Purchasing/Invnty
- Payroll
- Lazr-Forms
- Job Costing
- Job Estimating
- Bill of Materials

$99/$198 includes Source Code
M/C-AMEX- Visa-Check-COD
Datamar Systems
8586 Miramar Place
San Diego, CA 92121
800/223-9963, 619/452-0044

Business Applications

BizPlanBuilder™

Organize ideas, coordinate plans — convince others to support you. Intuitive, logical business & marketing plan template on diskette for launching a new product, service, or company. 90+ pages of outlines, headlines, written texts, tables... formatted into 33 ASCII text files.

Follow tutorials, fill in the blanks, edit into a finished plan. 126-page reference includes info about getting money from banks, SBA, investors. Integrated financials in Lotus 2.01 (convert or modify): detailed Budget, Income Statement, Balance Sheet (w/ 16 ratios), Cashflow, Break-Even Analysis. Dazzle your boss, banker or investors. 37,000+ sold! v 4.0 $129 +shipping

JIAN® Leverage Your Time & PC
800/ 346-5426
415/ 941-9191
MC•Visa•AX 30-Day Guarantee

CIRCLE 419 ON READER SERVICE CARD

Pay less to ship UPS!

Automate UPS shipping, save time and money with the Parcel Shipping Program (PSP). Prints UPS labels and COD tags. Maintains customer list. Calculates UPS charges and UPS Manifests, ensures accurate billing. Supports residential & commrcl. rates. UPS Approval & $ back gtd. $299. $5 Demo
East Hampton Industries, Inc.
81 Newtown Lane, Drawer 5069
East Hampton, NY 11937
800-645-1188, 516-324-2224
FAX 516-324-2248

Do You Ship by UPS®?

If you do, the Aristo Parcel Shipping System (APSS™) is for you! Meets all UPS requirements. Prints COD & regular labels, Pickup Manifest, etc. Saves customer list. Calculates zones & charges. Flexible setup menu to suit your needs. On-line help. Optional scale interface & other carriers. (RPS, Airborne, Fed EX, USPS, LTLs, etc). 60 Day $ back Gtd. UPS acceptance gtd. Full featured demo disk: $4 s/h.
Aristo Computers, Inc.
6700 SW 105th Ave. #307-J
Beaverton, OR 97005
800/3ARISTO, 503/626-6333

UPS Shipping Software

Use stand-alone or integrated with your accounting software as a pop-up window. No need to retype information. Computes zones & charges. Prints Manifest, COD tags, labels, etc. Also provides batch processing & customer database. Optional 100 wt, groundsaver & RPS. Single user, $249, Network, $449, Demo $10.
V-Technologies
P.O. Box 4321
Waterbury, CT 06704
(203) 879-6960 Fax (203) 879-6962

reconditioned **TONER cartridges!**
for laser printers & Canon PC Copiers

BETTER THAN NEW!
● 20% MORE TONER
● DARKER PRINT
● 100% GUARANTEED

From $44.95

We buy empties
call for brochure
800-426-8196

Willow Products Corp.
3857 Willow Ave, Pgh, PA 15234

WILLOW

CIRCLE 535 ON READER SERVICE CARD

CATALOG PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Church Applications

CHURCH SOFTWARE

Discover for yourself why more churches are choosing **PowerChurch Plus.**®
Try out the leading membership and accounting package.
Call today for your **FREE** full-working **DEMO.**

F1 SOFTWARE, 6300 Variel Avenue, Suite H, Woodland Hills, CA 91367
(800) 486-1800 (818) 888-1800

CIRCLE 562 ON READER SERVICE CARD

Church Windows!
Church Data Master Plus is the only mature, comprehensive church management program for Windows or MAC. Available as single modules or integrated. Membership, contributions and accounting. Priced from $265. Full featured demo with video $10. Also available church management programs for DOS applications.
Computer Helper Publishing
5898 Cleveland Avenue
Columbus, OH 43231
800/533-5227 614/895-7071

Church Partner
Written by Computer professionals involved in church management. Skilled users love its power, depth and flexibility. Novices love its ease of use. 13 optional modules with support and upgrades. For IBM compatibles, LANs, Macintosh, XENIX. We understand computers and churches. New Release: School Partner, for church-related dayschool and child care.
Summit Systems, Inc.
Suite 121, 16 Berry Hill Rd.
Columbia, SC 29210
803-798-9749, FAX: 803-731-0349

Church Management Systems

Expect the best!

- *Outstanding Reporting*
- *Superior Support*
- *Integrated Modules*
- *Over 1400 Installations*
- *Free Demo Disk*

1-800-247-8044

TSL - 3300 Bass Lake Road, -#304
Brooklyn Center, MN 55429
FAX 612-566-2250

CIRCLE 415 ON READER SERVICE CARD

Data Entry

THE DATA ENTRY EMULATOR™

Full featured, heads-down entry, with two-pass verification, batch control, output record reformat, operator stats, edit language, customizable menus, help text. Free technical support.

PC from $395
Also for LAN's, IBM AS/400™, IBM S/36

FREE trial

206/776-6443
800/356-0203

COMPUTER KEYES
21929 Makah Rd.
Woodway, WA 98020

Viking Data Entry
Professional Quality Software
- Used by U.S. Census
- Advanced Validation
- Sequential/ISAM files
- MS/DOS, UNIX, XENIX, VMS, AIX
- Technical support
- Re-key verify

Viking Software Services
4808 E. 67th St., Ste. 100
Tulsa, OK 74136
918/491-6144 FAX: 918/494-2701

Last year PC WORLD Catalog ads generated over 329,000 inquires. And 27% of our readers have bought or plan to buy a product in the catalog. That's millions of dollars in buying.

Are you getting your share?

Data Entry

DATA ENTRY

Why have over 85% of the largest companies in the U.S. selected the RODE/PC Data Entry System?

The answer will be obvious when you call for information and a free demonstration today.

(415) 323-8195

DPX • 490 California Avenue
Palo Alto, CA 94306

CIRCLE 406 ON READER SERVICE CARD

Replace dedicated *data input* systems
Front-end mainframe applications

KeyEntry III®

- LAN or stand-alone environments
- ScreenPainter and MenuManager included
- Batch Control System and Reformat utility
- Spanish, German, and French versions
- Outstanding customer support
- Thousands of users worldwide
- OS/2 version

800-533-6879

FREE DEMO DISK AVAILABLE TO QUALIFIED COMPANIES!

SCS
SOUTHERN COMPUTER SYSTEMS, INC.
(205) 251-2985 ■ FAX (205) 322-4851
In UK: SCS Europe, Ltd 0753-36550/ FAX 0753 36765

Educational

BS & MS
In Computer Sciences

- ALL COURSES BY CORRESPONDENCE.
- Increase your earning power.
- Join students from leading computer companies.
- Most courses fully interactive.

AMERICAN INSTITUTE OF COMPUTER SCIENCES

For free information write
2101-WO Magnolia Ave.
Suite 200
B'ham, AL 35205 USA
or call 1-800-767-2427

Scientific Calculator
See and print your work! You type equations in graphics mode with scripts, fractions, roots, matrices and Greek letters. Math symbols are typed directly, no control codes. Press F7 to solve the equations. Perfect for students because it formats your work like a textbook example. Only $19.95.
Mechanigram Corporation
977 E. Stanley Blvd. #153
Livermore, CA 94550
(510) 449-6762

Employment

JOBHUNT ™ Software!
"JobHunt Helps You Get a Job"– Byte. Helps Career Services increase their revenues. Gives names, addresses, phone/fax of leading employers. Displays by region or job function. Quickly mail-merges and prints personalized cover letters and labels for targeted mass-mailing of resumes. 30-day money back guarantee. Only $49.95 + $4.95 S&H. Free Update. Order Today!
Scope International (call 24 hours)
P.O. Box 25252, Dept. 1091
Charlotte, NC 28229-5252
1-800-THE JOBS or 1-800-843-5627
Phone & Fax:704-535-0614

Entertainment/ Games

The Computer Trivia Game Exclusively For Couples

Spicy Triv

Correct Answers Get Surprisingly Satisfying Results...

Built in editor allows you to Add and Edit Questions and Actions! Each player secretly selects the action categories they want, or are willing to try in the game. You may be delightfully surprised by your partners secret desires!

Send $24.95 + $3.00 S&H to
KMB SoftWare
P.O. Box 625
Rocky Hill, CT 06067
Specify 3.5 or 5.25 disks.
Must state age over 21

CIRCLE 580 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Entertainment/ Games

SOUND GRAPHICS

THE ONLY *256 COLOR VGA GRAPHICS* THAT *TALK* THROUGH YOUR STANDARD SPEAKER.

SG 12 – SWIMSUIT DISK
You will see the sexiest swimsuits while the girls TALK to you about their turnons and turnoffs.

SG 13 – SCIENCE FICTION DISK You will see incredible space shots and alien encounters while hearing other worldly descriptions and music.

Each disk is over 1.2 MB – plus over 2.5 MB of **FREE Utilities** for printing, cataloging, converting to WINDOWS WALLPAPER, and changing the pictures.

Prices: One Selection – **$19** • Both Selections – **$35**

Our Competitors Can't Sell You Pictures That TALK!

CUSTOM SOUND PICTURES
We add YOUR VOICE to YOUR PHOTO to create a CUSTOM SOUND GRAPHIC. A TRULY UNIQUE GIFT FOR BIRTHDAYS, OFFICE PARTIES, SPECIAL OCCASSIONS.
(Full information is on our sound disks)

CONNOISSEUR COLLECTION
ALL NEW! In 256 Color VGA!!

Disk #CC1 • ★ YOU BE THE STAR ★ The FIRST CUSTOMIZABLE movie allows you to write the dialog and the title. You can star with the partner of your choice. Incredible scenes display with your dialog. ONLY AVAILABLE FROM US!

Disk #CC2 • THE FIRST SOUND MOVIE! The first computer movie with SOUND. See the incredible 256 color VGA graphics while hearing the actual dialog. OURS EXCLUSIVELY!

Disk #CC3 • THE BEST MOVIE! The best computer movie available. Only for the serious collector. 256 stunning VGA colors.

1 Movie $29. 2 Movies $49. 3 Movies $65. All CC Disks Require VGA monitor and hard disk – over 1 MB of action.

eXXcapades – The first adult game with TRUE SOUND and 80 sizzling color VGA scenes
• Options for gender preference and game intensity - Play with 2-8 close friends - Over 5MB of pure action!
• Fulfill your carnal passions with new experiences - Find out how you and your partner can better relate.
$79 – Special Offer: **$69** with purchase of any CC1, CC2, CC3 disk above – **OURS EXCLUSIVELY!**

ADD $3 S/H • 3.5" Or FOREIGN ORDERS ADD $2/DISK
IN PA ADD TAX • MUST STATE AGE OVER 21
VISA/MC Orders only 800-243-1515 Ext. 600 BV
24 HRS./7 DAYS • Or check/MO to: SeXXy Software, 2880 Bergey Rd, Dept. 600 BV, Hatfield, PA 19440

CIRCLE 405 ON READER SERVICE CARD

"Mature"-RATED CD-ROM

Must state age 21
Other Products Available

$59.88

+ 70 VGA movies
+ Over 600 VGA GIF images - 640x480 & up
+ Completely menu-driven; Easy to use
+ Setup & compressed for use on BBS
+ DOS & Windows utilities included
+ No hard drive installation required

ISO 9660 Format

Send check/money order to:
Starware Publishing Corp.
P.O. Box 4188, Dept. 67
Deerfield Beach, FL 33442

Add $3 S&H
Add $3 Foreign
FL add 6% sales tax

800-354-5353
24 HOURS / 7 DAYS
US & Canada Orders

For more information, Credit Card FAX Orders & Foreign Orders call
Voice 305 - 426 - 4552
FAX 305 - 426 - 9801

CIRCLE 571 ON READER SERVICE CARD

THE LOTTO EDGE
HI-TECH LOTTO ANALYZER

Quality Computer-Assisted Number Analyzer

You make your analysis and choose your game-play numbers from computer calculated displays and reports. Data is based on your state's winning number history, using hi-tech statistical methods. You update weekly. Min. 256K. Programs, manual, one state's data, $44.95 + $4.00 shipping and handling. Each additional state $10.95. Credit card. *800/992-4045, ext. 439. (CA) 800/777-8814, ext 439.* Check/M.O.:

The LOTTO EDGE, ODDS UNLIMITED, P.O. Box 1223, Addison, IL 60101

PLAY TO WIN
LET YOUR PC DO THE WORK!

CIRCLE 549 ON READER SERVICE CARD

VGA Software
Visualize the full potential of VGA and SVGA.

Hi-res, 256 color images.

Vol.1 **Swimsuit** (6 disks per vol.) $13.95
Vol.2 **Au Naturel** $13.95
Vol.3 **Daring** $13.95
Vol.4 **Mature Only** $13.95

Hi-res VGA animation. Just like the movies!!

Vol. 5 **Mature VGA Movies** $13.95
Vol.11 **Hot Italian Movies** $13.95
Vol.12 **Long Length Movies** $13.95

Special....Order 4 volumes, select 5th free!

Choose from six 5¼" DD disks, three 5¼" HD (best deal), three 3½" DD, or two 3½" HD for each vol. All disks are full. Vol. 12 available in only HD disks.

Get more great software for less. Guaranteed. Fast service. Order today. Include $3 S&H. Must state age 21 or over. Send check or MO to:
Int'l orders add $3 US funds only
MC/VISA orders or free catalog call (309)452-7760.
CJCware
Dept. CW, P.O. Box 36
Normal, IL 61761

CIRCLE 496 ON READER SERVICE CARD

LOOPSCAN IMAGES

* VGA/SVGA ONLY
* 4 Disks per SET-$20 (+$3.00 s/h per SET)
* SET #7A - Awesome
* SET #7B - Dazzling
* SET #7C - Outrageous
* SET #7D - Torrid
* SET #7E - Breathtaking
* SET #7F - Exquisite
* Orders shipped at once.

Sample Disk- $5 Must state age over 21.
LOOP PREMIUM GRAPHICS
P.O. Box 597186
Chicago, IL 60659

Quit Horsing Around

Get sports handicapping help. Call or write for our free software catalog on horse racing, greyhound handicapping and sports betting. Prices are affordable ranging from $8 to $78. We can help take the guesswork out of handicapping. Visa and MasterCard accepted.
SOFTWARE EXCHANGE
P.O. Box 250002-PW
W. Bloomfield, MI 48325
1-800-527-9467
Ph/Fax: (313) 788-3342

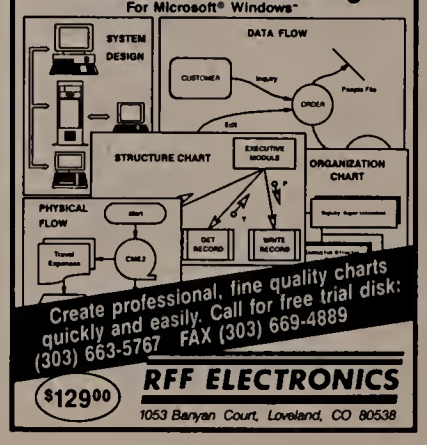
Financial

Loan–Amortization

EXEC-AMORT. Replace Desktop Financial Calculators, Avoid Inaccuracies, Quit Using Your Spreadsheet, Store Loans to Disk, Solve for PV,FV, I, PMT, N. Easy to read amortization reports, fixed & ARM's, APR's per Reg Z, Points & Fees, Balloons, irregular & skipped payments. $149.95 US + $5 s/h. Int'l add $25.
ELECTROSONICS
36380 Garfield, Suite 1
Fraser, MI 48026 USA
800-858-8448, 313-791-3010 fax
Int'l phone: 313-791-0770

Flow Charting

RFFlow
Professional Flowcharting
For Microsoft® Windows™



Create professional, fine quality charts quickly and easily. Call for free trial disk: (303) 663-5767 FAX (303) 669-4889

$129.00

RFF ELECTRONICS
1053 Banyan Court, Loveland, CO 80538

Genealogy

Family Roots™

Do it YOUR way! Huge variety & capacity for your family history. Make pedigree charts & descendants charts, group sheets, person sheets, indices, histories, address lables, searches, & much more. Call for FREE information. Satisfaction guaranteed. Any PC or compatible. MC/VISA/AmEx welcome.
QUINSEPT
Box 216
Lexington, MA 02173
800/637-ROOT, 617/641-2930

What's Up At PC WORLD?

Circulation

✔ Rate Base 620,000
-- an increase of 70,000
✔ Newsstand up 28%

Reader Response

✔ 28% more leads are now going to PC WORLD advertisers

Editorial Pages

✔ More editorial pages covering more products for managers.
✔ Focused on manager's needs: how to plan, buy & use.

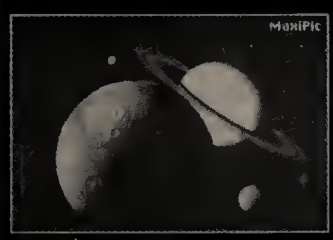
PC WORLD

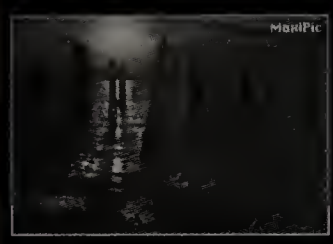
CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Graphics





Actual computer scanned images

SuperVGA

Computer Images

Also VGA/EGA/CGA/Mono and Animation

1024x768x256

Photographic Quality Real Color Images

BBS
1-800-GO-MODEM
Toll-Free Lines

Exclusive from Event Horizons, 50,000 top quality, state of the art color MaxiPic GIF images and Sound VGA Movies, all categories, ratings, resolutions.

BBS 800-GO-MODEM, or BBS 503 697-5100. $12/hr. Toll-Free lines $8/hr extra

No Modem? Order our Mail Image Library with Samples for $9. World-wide shipment. Info voice line 503-697-7700. Credit cards accepted. Same day shipment anywhere.

Event Horizons
311 Ave B, Suite 209
Lake Oswego, OR 97034
Information: 503-697-7700

CIRCLE 507 ON READER SERVICE CARD

Languages

Fortran Compilers

Whether you are developing new code or moving large mainframe programs to the PC, we have the Fortran Language Systems to meet your needs. Winners of PC Magazine's Editor's Choice and Technical Excellence Awards.
LAHEY COMPUTER SYSTEMS
Box 6091
Incline Village, NV 89450
800-548-4778, FAX 702-831-8123

Mailing Programs

FREE Catalog!

Zip Code & Mailing Software Catalog...
- ZIP +4 & Barcodes
- Carrier Routes
- List Correction
- Postal Presort
- Duplicate Elimination
- ZIP Selection within a Radius
- Nearest Dealer Locator
- Zip Code & Phone Location Databases
- Save on Postage, Time, Money!

Call for your FREE Catalog today!
MELISSA Data Corporation
32122 Paseo Adelanto
San Juan Capistrano, CA 92675-3600
800/443-8834 FAX: 714/661-5002

Mailing Programs

Today's PC Mail System

Fast! Accurate! Large volume mailers use PostWare software programs to:
- Standardize/correct addresses
- Add ZIP, ZIP + 4, Car. Rt.
- Presort 1/2/3 Class
- Detect duplicates
- Generate Postnet bar codes
- Palletize 2/3 Class
- Qualify for postal discounts

CASS-Certified. Reported throughputs over 100,000/hr.
Postalsoft, Inc.
4439 Mormon Coulee Rd.
La Crosse, WI 54601-8231
800/831-6245

The "Mail Order Master"

Software Program contains all the routines you need to run your Home or Office mail order business. Easy to use features include Powerful Database, Invoicing, Inventory Control, UPS Manifesting, Sales & Income Report, Sales Tax Report, Product Sales & Profit Report, Statements, Credit Card Voucher Printout, Bulk Mail Sort plus lots more. IBM compatible. Single User System. Priced at $599.00 Hands-On Demo $20.00
The Marshall Weiner Corp.
1700 Catalina Ave.
Seal Beach, CA 90740
800/874-4656 USA & Canada

The Mail Order Wizard

Complete management system for a catalog, inbound telemarketing, or mail order company. Order processing, inventory mgt, ad forecasting, sales/banking, list mgt, modem charge approval, EDC, UPS manifest w/scale interface. Single and Multi User Systems. Inbound/Outbound Editor's Choice.
Haven Corporation
802 Madison St., Dept W492
Evanston, IL 60202
800/782-8278, 708/869-3434

Maintenance Management

Maintenance & Inspection

An integrated maintenance management system, including parts inventory, with clients in Fortune 500 companies, utilities, hospitals, schools, manufacturing & service industries etc. The online system provides operational, planning & analytical reports such as work orders, schedules, skill & inventory requirements, budget reports & reports that summarize history of work performed.
Penguin Computer Consultants
PO Box 20485
San Jose, CA 95160
408/997-7703, Fax: 408/927-0570
800/521-0545

Health

Get Fit !! - Keep Fit !!

The *Top-Rated* Nutrition-Fitness Software. Lose weight! Control salt, fat, cholesterol! Plan fitness workouts. Fast, easy menu & diet planning. Analyze nutrients & food exchanges. Professional & personal versions. 2000-11,500 foods; 100-200 activities From $29. ***You'll ❤ it!***
FREE Demo Disk !!

ESHA RESEARCH
PO Box 13028-B
Salem, OR 97309
Phone: 503-585-6242
Fax: 503-585-5543

CIRCLE 408 ON READER SERVICE CARD

Inventory Control/ Management

POINT OF SALE INVENTORY

Inventory Control is like putting money in the bank. Programs for Auto Parts, Tire Dealers Wholesalers, Mail Order, Hardware Stores and other systems.
$189 - $489

NEED INVENTORY CONTROL?
Fast customer invoicing, Cash Drawer, Receipt Printer, Barcode Scanners, Credit Card Authorization, Key Pads, Accounts Receivables, General Ledger, Mailing List programs We have it all!

Freeman Software - Garland, Texas
800-426-6598 214-270-0625

CIRCLE 445 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Manufacturing

Advanced SUMIT

Manufacturing-BOM,WIP,MRP, Mfg.Eng.,Labor Performance, Shop Scheduling, Inv. by Location, Lot Control, Just in Time, Cost Accounting, Quality Assurance, Preventative Maint.
Materialle-Inv. Control, Order Entry, PO Mgmt., Sales Analysis.
Accounting-AP,AR GL. Strong QBE. Customizeable by you, Multi-User DBMS.
T.L. Creates, Inc.
345 N. Yosemite, Suite 200
Stockton, CA 95203
209-946-0105, 209-946-0150 fax

Medical

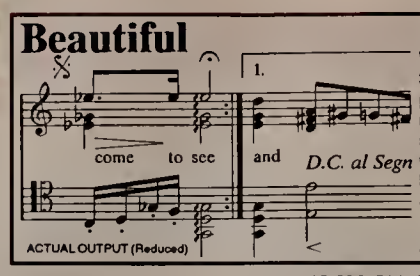
Medical Systems with ECS

PPM offers a complt. line of med. SW from simple ins. claims proc. to comprh. A/R mgt.
PC CLAIM PLUS - claims proc. w/ECS to 100+ major ins. carriers - 30 day MB Guar.
THRESHOLD - complete A/R, Pt. Bill, comprh. practice mgt stats.
CLAIM NET - Nationwide elctrnc claims clearinghse transmits to 100+ ins. carriers. SW starts at $649. Dealer inquiries welcome.
Physicians Practice Management
350 E. New York
Indianapolis, IN 46204
800/428-3515, 317/634-8080

Music

Don't buy *any* PC MIDI products before trying the full-line from the ***industry leader***. It's a risk-free way to learn about PC music. Apply the cost if you buy software from us.
Voyetra Dept PCD, 333 5th Ave Pelham, New York 10803 (914) 738-4500 Fax: (914) 738-6946
Orders/Free Catalog: 1-800-233-9377

CIRCLE 514 ON READER SERVICE CARD



L.M.P Laser Music Processor
WYSIWYG desktop music scoring on your IBM PC / XT / AT. Print 300 dpi on HP-LaserJet II, IIP, III, DJ or 240 dpi on Epson/IBM printers. VGA / EGA / MCGA / Herc / CGA / AT&T displays. No staff, measure, or note restrictions. 100 pages/song. Create and print smooth-flowing ties, slurs, and beams. Record and score MIDI files with MPU-401, Sound Blaster, serial, parallel and other interfaces. Mouse, PCX, international character sets, and more!
TEACH Services (800)367-1844
RT 1, Box 182-Donivan Rd, Brushton, NY 12916
BBS (518) 358-3352 (shipping $5 00 US, NY + 7% TAX)
only... $129.95

CIRCLE 500 ON READER SERVICE CARD

SongWright

MUSIC PROCESSOR prints professional sheet music, songs, scores with text, chords, dynamics. Compose, edit, record, play, transcribe, copy, transpose, extract, import, publish - all in standard notation. Symbol editor/librarian. PC, MIDI or SMF entry & playback. Matrix/laser printers. $119.95 + $5 s/h. Free sample output.
SONGWRIGHT SOFTWARE
7 Loudoun Street, S.E., Ste. 5B
Leesburg, VA 22075
1-800-877-8070, 703-777-7232

Networking

The $25 Network

Try the 1st truly low cost LAN

- Connect 2 or 3 PCs, XTs, ATs, PS/2s
- Uses serial ports and null modem cable
- Runs at 115K baud, in only 15k of ram
- Runs in background, totally transparent
- Share any device, any file, any time
- $25/network, Not Node! Version 2.3m

Skeptical? We make believers!

iMODES Information Modes
Drawer F, Denton, TX 76202
817-387-3339 Technical
1-800-628-7992 Orders

CIRCLE 524 ON READER SERVICE CARD

Point of Sale

RoundTable Restaurant Point Of Sale

RoundTable Restaurant System

Control Food and Labor Costs, Waste. Point Of Sale, Timeclock, Security. Supports Cash Drawer, Receipt and Food Printers, Network Option. IBM Compatible. Cumulative Reporting, Including Liquor.

$895 Easy Restaurant Software $895

(800) 324-2388

Advanta Technologies
One West Loop South
Suite 801
Houston, Tx 77027
(713) 622-9841

CIRCLE 504 ON READER SERVICE CARD

Public Domain/ Shareware

FREE
IBM SOFTWARE CATALOG
24 Pages! ASP Member

SOFTSHOPPE, INC.
P.O. BOX 3678
ANN ARBOR, MI 48106
Tel: (313) 761-7638
FAX: (313) 761-7638

Toll-Free—24 Hrs.
1-800-829-BEST

CIRCLE 512 ON READER SERVICE CARD

FREE Software Catalog

Over 700 of the best IBM P/D and S/W Software Programs
As low as 90 cents per disk
We will not be UNDERSOLD
CALL NOW !!!
1-800-950-4366

Software International Exchange
6540 W. Atlantic Blvd.
Margate, Florida 33063

CIRCLE 533 ON READER SERVICE CARD

• FREE •
11 GREAT PACKAGES OF SOFTWARE FOR IBM®

1. WINDOWS® 2. GAMES
3. DESKTOP PUBLISHING
4. CLIP ART 5. UTILITIES
6. FONTS - RequiresAdobe Type Manager®
7. TRICKS/JOKES
8. BUSINESS 9. RELIGION
10. HOME AND HEALTH
11. EDUCATION 4-16 yrs

PAY ONLY $5.00 SHIPPING PER PACKAGE.
EACH PACKAGE CONTAINS 15/5.25" OR 8/3.5" DISKS
• credit cards only •

SMC SOFTWARE PUBLISHERS
619.931.8111 extension 511

CIRCLE 479 ON READER SERVICE CARD

PsL Public (software) Library

The best organized, most comprehensive, most up-to-date... - PC Today
...Extravagant service... - Whole Earth Review

Call for a free newsletter:
800-2424-PSL 713-524-6394
Member - ASP

CIRCLE 503 ON READER SERVICE CARD

Real Estate

Property Management

Rental-Ease. State of the art software. Extremely fast and easy to learn and use. Everything is included: tenant tracking, repairs and maintenance, income and expense, check writing and recurring bills. No extra modules to buy. The ultimate in property management. $695 complete. Free brochure, Demo $10.
Strategic Office Systems
688 North 500 West #61
Mt. Pleasant, UT 84647
800/942-6784 or 801/462-2130

CATALOG PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Real Estate

• Property Mgt Plus/92 •
New version which looks up tenants & posts rent by Tenant Name. Prints.. Bank Deposit Slips, Rent Statements, & Automatic Checks. Reports. Late Rents, Vacancies & Expired Leases. Posts Management Fees, Pays Owners & does 1099s. Saves up to 80% of accounting time & is the EASIEST system to use!
Realty Software
133 Paseo de Granada
Redondo Beach, CA 90277
310/372-9419 or 801/649-6149

Property Management
Comprehensive software for managing residential, commercial, condos & more. Three versions: Basic PM for owner/manager-$495, Deluxe PM for professional management-$1,195, Multi-User with Novell network compatibility-$2,395. Includes check writing, recurring expenses, G/L, management reporting.
Yardi Systems, Inc.
819 Reddick Street
Santa Barbara, CA 93103
805/966-3666

Property Management
Professional software since 1983. Menu operated - easy to learn and use. We have the system for you and your special needs.
* Residential/Resort rentals
* Commercial/Office Park rentals
* Condominium/Time Share rentals
* Motels *RV Parks *Campgrounds
* Accounting for Condos and HOAs
Call or write for information packet and demo diskette.
BOCAR Systems
P. O. Box 20357
Bradenton, FL 34203-0357
813-751-9175

Property Management
Since 1978 over 7,000 users of our software have found it comprehensive, flexible & easy to use. We offer systems to manage the following types of properties: COMMERCIAL/ RESIDENTIAL/CONDOMINIUM/ HOME OWNERS ASSOC./MINI-STORAGE FACILITIES. For more information & sample printouts call:
Realty Automation, Inc.
11365 Eastshore Drive
Hayden Lake, ID 83835
208-772-3259

Security

FIGHT PIRACY & PROTECT YOUR PROGRAM $$$'s!

Since 1986, companies worldwide have been choosing Az-Tech security products. If you demand the strongest protection available, why not choose one of these "proven leaders":

- **EVERLOCK** Copy Protection
- **EVERLOCK** Software Security
- **EVERKEY II** "The Lock"

For IBM and Compatibles.
30 day money back guarantee.
Free info and demo disk available.

Az-Tech Software, Inc.
201 East Franklin, Ste. 11
Richmond, MO 64085
(800) 227-0644 (816) 776-2700
FAX (816) 776-8398

CIRCLE 403 ON READER SERVICE CARD

Statistics

NCSS 5.x Series - $125
Easy-to-use menus & spread sheet. Multiple regression. T-tests. ANOVA (up to 10 factors, rep. measures, covariance). Forecasting. Factor, cluster & discriminant analysis. Nonparametrics. Cross Tabulation. Graphics: histograms, box, scatter, etc. Reads ASCII/Lotus. Many new add-on modules.
NCSS
329 North 1000 East
Kaysville, UT 84037
Phone: 801-546-0445
Fax: 801-546-3907

StatPlan V
Introducing StatPlan V! The easiest-to-use statistical package just got easier! Featuring pull-down menus, full mouse support and expanded printer support. StatPlan V's analyses include regression, correlation, crosstabs, curve fitting, t-tests, time-series, ANOVA, etc. Handles up to 30,000 data points. Interfaces directly with Lotus and ASCII files. Only $199. Demo also available for $10.
The Futures Group
80 Glastonbury Blvd.
Glastonbury, CT 06033
203/633-3501

Surveys

The Survey System
A complete, easy-to-learn package for the entry, editing, processing & presentation of questionnaire data. Produces banner format crosstabs & related tables, statistics (incl. regression) & graphics. Also codes & reports open-ends. All reports are camera-ready. CRT interviewing options available.
Creative Research Systems
15 Lone Oak Ctr., Dept. W
Petaluma, CA 94952
707/765-1001

New!

STAT PAC IV GOLD *The Standard for Survey & Marketing Research Software.*

A comprehensive PC package for questionnaire design, sampling, data management, CRT and telephone interviewing, statistical analyses and presentation quality graphics. Free brochure.

StatPac
StatPac Inc.
3814 Lyndale Ave. S.
Minneapolis, MN 55409
Tel: (612) 822-8252 Fax: (612) 822-1708

CIRCLE 586 ON READER SERVICE CARD

Training

Novell Netware Interactive Training Videos

Video Instruction Tools

A User's Guide to Netware $695
A complete *video tour* of the world's most popular networking software
1 VHS tape, 90 pg. workbook, Run Time 112 min. (Code UGNN)

The Novell Administrator Series: Vol. I, Netware Customization $995
Multimedia training for Novell Administrators & CNE's
2 VHS tapes, 140 pg. workbook, Run Time 213 min. (Code NA1)

HALVERSON ASSOCIATES, INC.
1313 Newburgh Road
Westland, MI 48185
(313) 729-0325
FAX (313) 729-2424
CUSTOMER SERVICE:
1-800-462-2817
DEALER SALES:
FAX (313) 729-0238

For Our MultiMedia Training Catalog Call: 1-800-537-1641

CIRCLE 520 ON READER SERVICE CARD

Utilities

Opt-Tech Sort/Merge 4.0
Extremely fast Sort/Merge program. Run as a DOS command or CALL as a subroutine. Unlimited filesizes, most languages, datatypes & filetypes supported including Btrieve & dBASE. Advanced features include record selection, record reformatting & much more! Call or write for more info. MS-DOS $149, OS/2, Xenix, Unix $249.
Opt-Tech Data Processing
PO Box 678
Zephyr Cove, NV 89448
702/588-3737

REMOVE HARDWARE LOCKS

Protect your investment!

Don't wait for your lock to get lost, stolen or fail and render your program useless costing you $$$$

Our SAFEKEY'S are guaranteed to unlock the following programs:

MaxRoute	Pads 2000	Tango PCB
MasterCam	Pads PCB	PCAD
MicroStation	CadKey	& others

Only $399 plus S&H
(609) 390-2799
Fax: (609) 390-3750
IMAGINE THAT

CIRCLE 437 ON READER SERVICE CARD

Last year PC WORLD Catalog ads generated over 329,000 inquiries. And 27% of our readers have bought or plan to by a product in the catalog.
That's millions of dollars in buying.
Are you getting your share?

PC WORLD

The Business Magazine
of PC Products and Solutions

ADVERTISING SALES

Richard J. Marino
Associate Publisher
Sales, Marketing, & Research

Asst. to the Associate Publisher
Colette Cornish

Bernard J. Theobald, Jr.
Vice President/Group Advertising Director

Advertising Director for Market Development
Jeff Edman (415/243-0500)

Western Advertising Director
Celia Canfield (415/243-0500)

Eastern Advertising Director
Bob Ostrow (508/820-0440)

Mid-Atlantic/Manhattan
John Grogan, Northeast Account Manager (201/587-0090)

Midwest/Chicago
Mark Taussig, National Accounts Manager/Direct Channel Consultant (708/827-4477)

New England/Ohio/Michigan/Western Pennsylvania
Michael Welsh-Carroll, Account Manager (508/820-0440)

Northern California/San Francisco
Ellen Levin, Account Manager (415/243-0500)

Northwest
Greg Mason, Account Manager (415/243-0500)

San Diego/Southwest/Orange County
Account Manager (714/250-8081)

San Jose
Susan Simmons, Account Manager (415/243-0500)

Southeast/Atlanta
Judy Sutter, Senior Account Manager (404/394-0758)

Southern California/Los Angeles
Denise Pilnak, Account Manager (213/312-8008)

Texas
Harvey Diamond, Senior Account Manager (214/233-3492)

PC World Catalog
Catalog Advertising Manager
Sandie Wade
Eastern Account Manager
Duane Hampson
Catalog Coordinating Manager
Elizabeth Maffly (800/435-7760 in California, 800/435-7766 outside California)

PC World Action Cards
Kevin Normandeau
Telemarketing Representative
(508/820-8113)

Circulation
Vice President, Circulation
Heather Martin Maier
Asst. to the Vice President
Anna Mercaldi

Subscription Director
David Ball
Senior Promotion Manager
Francesca Davies
Circulation Business Manager
Noël White
Promotion Manager
Ellen DiMatteo
Promotion Coordinator
Jane Kratochvil
Renewal & Billing Coordinator
David Cobb
Subscriber Service
Katherine McCarthy

Single Copy Sales Vice President
Gerald Kemmet
Single Copy Sales Director
Linda Ruth
Single Copy Sales Manager
Dinny Zimmerman

Marketing & Research
Research Director
Cheryl Curbow
Marketing Manager
Bruce Frymire
Sales Promotion Director
Nola Armijo
Reprints Coordinator
Scott Shores
Marketing Coordinator
Sandy Wong

Production
Vice President, Manufacturing
Linda Manes Goodwin
Senior Production Manager
Laura Smith
Assistant Production Manager
Cindy Ahuna
Advertising Information Administrator
Kevin Octavio
Advertising Traffic Coordinator
Paul O'Neil
Production Assistant
Nancy Low

Administration
Director of Finance Vicki Peilen
Human Resources Director
Richard Willoughby
Director of Information Services
Walter J. Clegg
Corporate Business Manager
Christina Spence
Accounting/Operations Manager
Pat Murphy
Accounting/Facilities Manager
Michelle Reyes
Financial Analyst
Madeleine Buckingham
Management Associates, President's Office
Thomas Gewecke,
Michael Harwayne
Asst. to the President
Kelly Milan
Administrative Asst., President's Office
Kristin Kueter
Human Resources Administrator
Thalia Ohara
Human Resources Assistant
Maria Chico

ADVERTISER INDEX A TO Z

Get more information—circle the appropriate number on the reader service card.

Reader Service Number		Page Number
54	Acer America	67
2	Addstor	247
9	Advanced Logic Research	10-11
22	Aldus	284-285
—	America Online, Inc.	25-26
45	American Power Conversion	74
306	American Small Business Computers	282
—	Anthro Corp.	42
8	Arlington Computer Products	324
43	ASP Computer Products	293
5	ATI Technologies, Inc.	131
4	Autodesk	265
41	Bitstream	151
24	Boffin, Ltd.	254
86	Brown Wagh Publishing	269
215	Buffalo Products, Inc.	318
25	BusinessVision Management	268
64	CAD ONE	320
21	Caere Corp.	58-59
50	Canon	34
52	Central Point	12
91	Citizen America	105
—	Claris	239
47	Compaq	60-61
33	CompuServe	89
42	Computer Associates	24
29	Computer Associates	287
—	The Computer Bowl	205
68	Computer Discount Warehouse	316-317
181	Concentric Data Systems, Inc.	257
37	The CONNEXperts	36
48	Corel Systems Corp.	93
92	Corel Systems Corp.	245
56	Cougar Mountain Software	94
62	Crosstalk	116-117
—	Curtis	91
94	DacEasy, Inc.	107
70	DacEasy, Inc.	157
74	Dell Computer Corp.	C5-C8
61	Delrina Technology	234
83	DeScribe Inc.	266
60	Desktop Direct from Digital	167-172
—	Dow Jones	219
85	Dyna Micro	268
72	Eltech Research	321
100	Fast Micro	111-113,312-313
81	Fifth Generation	20
76	Fox Software	32-33
—	Gateway 2000	197-204
—	Genstar Rental Electronics	281
117	Good Software	214
98	Haventree Software Ltd.	262
105	Hayes Microcomputers	95
106	Hyundai Electronic America	29-31
119	Innovative Data Design	70
118	Jetfax, Inc.	244
141	Kenosha Computer	322
—	LA Trade	314
123	Laser Press & Graphics	319
128	Liberty Systems	8
126	Logical Connection	65
175	Lotus	22-23
—	Lotus	14-15
161	Mannesmann Tally Corp.	280
150	Map Info	128
217	Merritt Computer Products	283
168	Microbiz	325
183	Micrografx	9
160	MicroProse	223
—	Microsoft	86
166	Microsoft Press	278
172	MIS Computer Systems	315
147	M-USA Business Systems	246
195	NBI	165
187	NEC Technologies	C2-P1
182	NEC Technologies	76
205	NEC Technologies	240-241
203	NEC Technologies	276-277
158	NewGen Systems	68
159	NewGen Systems	68
185	Newsnet	253

PC World is a publication of International Data Group, the world's largest publisher of computer-related information. International Data Group publishes more than 130 computer publications in more than 40 countries. Nineteen million people read one or more International Data Group publications each month. International Data Group's publications include: **ARGENTINA**'s Computerworld Argentina; **ASIA**'s Asian Computerworld; **AUSTRALIA**'s Australian Macworld, Australian PC World, Computerworld Australia; **AUSTRIA**'s Computerwelt Osterreich; **BRAZIL**'s DataNews, PC Mundo; **CANADA**'s ComputerData; **CHILE**'s Computacion Personal, Informática; **COLOMBIA**'s Computerworld Colombia; **DENMARK**'s CAD/CAM World, Computerworld Danmark, Macworld Danmark, PC World Danmark, Unix World; **FINLAND**'s Mikro PC, Tietoviikko; **FRANCE**'s Distributique, Info PC, Le Monde Informatique, Télécoms International; **HUNGARY**'s Computerworld SZT, Mikrovilág; **INDIA**'s Computers & Communications; **ISRAEL**'s People & Computers Weekly; **ITALY**'s Computerworld Italia, PC World Italia; **JAPAN**'s ComputerWorld Japan, InfoWorld, Publish!; **KOREA**'s Hi-Tech Information/Computerworld; **MEXICO**'s Computerworld Mexico, PC Journal; **THE NETHERLANDS**' Amiga World, Computerworld Netherlands, PC World Benelux; **NEW ZEALAND**'s Computerworld New Zealand, PC World New Zealand; **NIGERIA**'s PC World Africa; **NORWAY**'s Computerworld Norge, Macworld Norge, PC World Norge; **PEOPLE'S REPUBLIC OF CHINA**'s China Computerworld, China Computerworld Monthly; **POLAND**'s Computers; **SPAIN**'s Amiga World, CIMWorld, Computerworld España, Comunicaciones World, PC World España; **SWEDEN**'s Computer Sweden, Mac World, MikroDatorn, PC\Nyheterna, Svenska PC World; **SWITZERLAND**'s Computerworld Schweiz; **TAIWAN**'s Computerworld Taiwan, PC World Taiwan; **UNITED KINGDOM**'s Graduate Computerworld, ICL Today, Lotus, Macworld, PC Business World; **UNITED STATES**' AmigaWorld, CIO, Computerworld, Digital NEWS, Federal Computer Week, GamePro, inCider/A+, InfoWorld, International Custom Publishing, Macworld, MPC World, Network World, NeXTworld, PCGames, PC World, Portable Computing, Publish, Run, Sun World; **USSR**'s Manager, Network, PC Express, PC World USSR; **VENEZUELA**'s Computerworld Venezuela, Micro Computerworld; **WEST GERMANY**'s Amiga Welt, Computerwoche, Information Management, Macwelt, PC Welt, PC Woche.

Reader Service Number		Page Number
—	Northgate Computer Systems	96-97, 102-103, 212-213, 248-249, 288-289
190	Norton Lambert	19
—	NRI Schools	71-72
—	Pacific Data Products	37
231	Panasonic	40-41
233	Patton & Patton Software	252
198	PC Brand	4-7
—	PC Connection	182-187
207	PC World Online	290
—	PC Zone	232-233
144	Peachtree Software	127
—	Pen-Based Computer Conference	272
212	PKWARE	196
211	Power Up! Software	16
—	Quarterdeck Office Systems	242
227	Reasonable Solutions	323
282	Reference Software	56
243	Reference Software	108-109
239	Rose Electronics	238
255	Sampo	158
256	Secure-It	106
—	Software Publishing Corp.	210-211
269	Software Toolworks	281,283
258	Sourcemate	290
253	SPSS, Inc.	250
—	Sysgen	231
296	Texas Instruments	99
259	Tiger Software	134-145
289	TIMESLIPS Corp.	101
287	Timeworks	237
257	Toshiba	260-261
300	ViewSonic	28
301	Westbrook Technologies	264
325	Western Telematic	132
319	XTree	152
324	Zeos International, Ltd.	43-55
316	Zeos International, Ltd.	78,83
311	Zeos International, Ltd.	79
313	Zeos International, Ltd.	82
323	Zeos International, Ltd.	84-85
321	Z Soft Corp.	270-271

ADVERTISER INDEX BY PRODUCT CATEGORY

Get more information—circle the appropriate number on the reader service card.

HARDWARE

Boards/Cards/Chips

5	ATI Technologies, Inc.	131

Communications

105	Hayes Microcomputers	95
118	Jetfax, Inc.	244

Computers

54	Acer America	67
9	Advanced Logic Research	10-11
74	Dell Computer Corp.	C5-C8
60	Desktop Direct from Digital	167-172
85	Dyna Micro	268
72	Eltech Research	321
100	Fast Micro	111-113,312-313
—	Gateway 2000	197-204
—	Genstar Rental Electronics	281
106	Hyundai Electronics America	29-31
172	MIS Computer Systems	315
203	NEC Technologies	276-277
—	Northgate Computer Systems	96-97, 102-103, 212-213, 248-249, 288-289
324	Zeos International, Ltd.	43-55
316	Zeos International, Ltd.	78,83
311	Zeos International, Ltd.	79
313	Zeos International, Ltd.	82

Desktop Publishing

—	Pacific Data Products	37

Laptop/Notebook

47	Compaq	60-61
205	NEC Technologies	240-241
257	Toshiba	260-261
324	Zeos International, Ltd.	43-55
311	Zeos International, Ltd.	79
323	Zeos International, Ltd.	84-85

Local Area Networks

43	ASP Computer Products	293
215	Buffalo Products, Inc.	318
37	The CONNEXperts	36
126	Logical Connection	65
239	Rose Electronics	238
325	Western Telematic	132

Monitors

187	NEC Technologies	C2-P1
255	Sampo	158
300	ViewSonic	28

Multimedia

24	Boffin, Ltd.	254

Peripheral/Sharing Devices

43	ASP Computer Products	293
37	The CONNEXperts	36
126	Logical Connection	65
239	Rose Electronics	238
325	Western Telematic	132

Printers

50	Canon	34
91	Citizen America	105
123	Laser Press & Graphics	319
161	Mannesmann Tally Corp.	280
182	NEC Technologies	76
158	NewGen Systems	68
159	NewGen Systems	68
231	Panasonic	40-41
198	PC Brand	4-7
296	Texas Instruments	99

Power/Protection

45	American Power Conversion	74

Storage/Backup Devices

2	Addstor	247
24	Boffin, Ltd.	254
128	Liberty Systems	8
—	Sysgen	231

SOFTWARE

Accounting/Financial

25	BusinessVision Management	268
29	Computer Associates	287
56	Cougar Mountain Software	94
94	DacEasy, Inc.	107
70	DacEasy, Inc.	157
117	Good Software	214
147	M-USA Business Systems	246
144	Peachtree Software	127

CAD/CAM

306	American Small Business Computers	282
119	Innovative Data Design	70

Communications

62	Crosstalk	116-117
190	Norton Lambert	19

Database Management

42	Computer Associates	24
181	Concentric Data Systems, Inc.	257
76	Fox Software	32-33

Desktop Publishing

22	Aldus	284-285
211	Power Up! Software	16
287	Timeworks	237
321	Z Soft Corp.	270-271

Education

269	Software Toolworks	281,283

Entertainment

160	MicroProse	223

Graphics

306	American Small Business Computers	282
4	Autodesk	265
48	Corel Systems Corp.	93
92	Corel Systems Corp.	245
119	Innovative Data Design	70
183	Micrografx	9
—	Software Publishing, Corp.	210-211
287	Timeworks	237
301	Westbrook Technologies	264

Local Area Networks

98	Haventree Software Ltd.	262

Management

168	Microbiz	325
258	Sourcemate	290

Multimedia

86	Brown Wagh Publishing	269

Optical Character Recognition

21	Caere Corp.	58-59

Other

150	Map Info	128

Presentation Graphics

86	Brown Wagh Publishing	269
—	Claris	239
—	Lotus	14-15

Project Management

98	Haventree Software Ltd.	262
233	Patton & Patton Software	252
289	TIMESLIPS Corp.	101

Statistics

253	SPSS, Inc.	250

Utilities

52	Central Point	12
81	Fifth Generation	20
212	PKWARE	196
—	Quarterdeck Office Systems	242
319	XTree	152

Windows

5	ATI Technologies, Inc.	131
4	Autodesk	265
48	Corel Systems Corp.	93
92	Corel Systems Corp.	245
61	Delrina Technology	234
117	Good Software	214
183	Micrografx	9
195	NBI	165
316	Zeos International, Ltd.	78,83
321	Z Soft Corp.	270-271

Word Processing

41	Bitstream	151
83	DeScribe Inc.	266
175	Lotus	22-23
—	Microsoft	86
195	NBI	165
282	Reference Software	56
243	Reference Software	108-109

MISCELLANEOUS

Books/Periodicals

166	Microsoft Press	278

Computer Accessories

—	Anthro Corp.	42
—	Curtis	91
217	Merritt Computer Products	283

Mail Order

8	Arlington Computer Products	324
64	CAD ONE	320
68	Computer Discount Warehouse	316-317
100	Fast Micro	111-113,312-313
—	Gateway 2000	197-204
141	Kenosha Computer	322
—	LA Trade	314
123	Laser Press & Graphics	319
172	MIS Computer Systems	315
—	PC Connection	182-187
—	PC Zone	232-233
227	Reasonable Solutions	323
259	Tiger Software	134-145

On-Line Services

—	America Online, Inc.	25-26
33	CompuServe	89
—	Dow Jones	219
185	Newsnet	253
207	PC World Online	290

Security

256	Secure-It	106
319	XTree	152

Training

—	NRI Schools	71-72

PRODUCTS FEATURED IN EDITORIAL

Get more information—circle the appropriate number on the reader service card.

Accounting

773	One-Write Plus Accounting Works, Retail Express; Great American Software	104

Reader Service Number — Page Number

Antivirus Software

768 Untouchable, Fifth Generation Systems 98
769 ViruSave 4.5, XTree 98

Computer System

712 386/33 Cache, PC Brand 177
674 386-33C, Dynamic Decisions ... 175
699 386-33, Micro Generation 177
717 386-33 MX, Proteus Technology 177
646 386-33 Sonic, Ares Microdevelopment 175
723 386/33 Vantage, Strobe Computer 177
657 386/33 Warrior, C2 MicroSystems 175
654 386 DX-33 Cache, Blue Dolphin Computers 175
667 386DX/33 CTI, CTI 175
640 AB 386/33, Absec Research 175
643 ACE 386-33, American Computer Express 175
642 Acma 386/33, Acma Computers 175
647 ACP 386-33, Arlington Computer Products 175
649 ACT 386-33C Cache System, Automated Computer Technology ... 175
668 Advantage 386-33 CX, CUI 175
645 AMS 386-33C, AMS 175
639 AN333C, Aberdeen 175
644 ARC 386/33C, American Research 175
648 ATC 386-33, A-Tronic Computer 175
653 BCG 386/33, Blue Circle Group 175
652 BLK 386/33, Blackship Computer Systems 175
686 Blue Max 386/330, International Instrumentation 175
655 Blue Star 386DX-33, Blue Star Computers 175
650 BTI System 386-33C, Binary Technology 175
656 Bulldog 386-33, Bulldog Computer Products 175
658 CIN 3033 CSV Enterprise 33C, CIN 175
661 CMO 386/33, New MMI 177
760 Compaq LTE Lite/25, Lite 20; Compaq Computer 87
660 CompuAdd 333, CompuAdd Computer 175
662 Compudyne 386/33 DX, Compudyne 175
665 CompuTrend 386-33, CompuTrend Systems 175
666 Comtrade 386/33, Comtrade Electronics USA 175
669 Data 386i-33, Dataworld 175
670 DEICO System 386DX-33, DEICO Electronics 175
671 Dell System 333P, Dell Computer 175
762 Dell System 486P/20, P/25, P/33; Dell Computer 88
843 Deskpro/M, Compaq Computer 69
651 DeskStation Model 333C, BitWise Designs 175
672 Destiny 386/33, Destiny Computer 175
673 DT 386-33, Diamond Technologies 175
679 EiSys 386-33, G.C.H. Systems 175
850 Elegance ZXP, Northgate 75
675 EPS 386-33, EPS Technologies 175
659 Falcon 333, Club American Technologies 175
676 FastData 386/33, FastMicro 175
677 FCS 386-33, First Computer Systems 175
729 Flash Cache 386-33, Tri Star Computer 177
734 Flex 386/33, USA Flex 177
678 Gateway 2000 386/33, Gateway 2000 175
680 HD386-33C, HD Computers ... 175
681 HIQ 333 DX, High Quality Systems 175
682 HTS 386 Deluxe System, High Tech Supply 175
685 IDS 333i, International Data Systems 175
696 Impact 386/33+D, Mega Computer 177
683 Insight 386-33 Cache, Insight Computer 175
684 INT 386-33, Intelec 175
687 Iverson 386/33, Iverson Computer 175
688 JCC 386-33, JCC Systems 175
664 Kandu 386-33, Computer Square 175
842 KCC 386-33, Kenosha Computer Center 175
689 Key 386-33, Keydata Int'l 177
690 Kris System 38M, Kris Technologies 177
692 Legatech 386-33, Legatech Computers 177
693 LodeStar 386/33, LodeStar Computer 177
694 LSI 386/33 SVG, Lucky Computer 177
705 M333, MIS 177
765 MastersPort 386SLe, Zenith Data Systems 92
730 Maxxima 386/33, Tri State Computers 177
697 MCC 386-33, Microcomputer Concepts 177
698 Micro Express ME 386-33, Micro Express 177
703 Mile Hi Model 386-33, Mile Hi Micro Distributing 177
704 Miracle Computer 386/33, Miracle Computers 177
695 MT 333-P, Maple Leaf Computer 177
702 MT 386/33, Micro Tough 177
700 MX 333, Micro Symplex 177
706 Myoda 386-33, Myoda 177
709 N333 System, Netis Technology 177
707 Naga 386/33, Naga Systems 177
708 NCI 386/33, National Computer 177
844 NEC UltraLite SL/25C, NEC Technologies 92
641 Nobel 386/33, Accel 175
710 Northgate 386/33, Northgate Computer Systems 177
711 Novas Optimum 386-33, Novacor 177
714 PC Turbo 386/33, PC Turbo 177
715 Peregrine 386/33, Peregrine Computers 177
716 Poly 386-33DX, Polywell Computers 177
691 Profex 333, Lanwise 177
719 Royal 386-33, Royal Computer 177
720 Sai 386/33, Sai Systems Laboratories 177
721 Santron 386-33 Cache, Santron Computer 177
722 Solidtech 386-33, Solidtech 177
724 STI 386-33, Sunnytech 177
725 Swan Technologies 386/33, Swan Technologies 177
726 Syntax 386-33, Syntax Computer 177
727 Sysper 386/33 Cache, Sysper Technologies 177
728 Tangent 333C, Tangent Computer 177
701 Telesis 386-33, Micro Telesis ... 177
713 Touche 386/33, PC Pros 177
731 True Data 386/33, True Data Products 177
663 Ultra 386/33C, Computer Market Place 175
732 Ultra-Max 386-33, Ultra-Comp 177
733 USA Electronics 386/33, USA Electronics 177
735 U.S. Turbo 386-33, U.S. Turbo System 177
736 V-COM 386/33C, V-COM 177
737 Vektron PSY 386/33C, Vektron Int'l 177
738 Zeos 386-33, Zeos Int'l 177

Data Base Management

841 dBASE 1.5, Borland Int'l 77
784 Personal Biz-Base 2.2, Biz-Base 115
780 R&R Report Writer for Paradox, Concentric Data Systems 114

Data Base Server

782 SQLBase 5.0, Gupta Technologies 114

Data Management

770 DataEase Personal, DataEase Int'l 100

Development Tool

840 HP NewWave 4.0, Hewlett-Packard 73

Disk Drive

830 40MB–200MB drives for Model 25 or 30, jb Technologies 38
764 Passport XL, Quantum 90
829 Plus Hardcard 40, Quantum 38

DOS Shell

771 SuperGUI, Media Management 100

Financial

633 Andrew Tobias' Managing Your Money, Meca Software 326
634 Quicken 5.0 for DOS, Intuit 326
635 WealthStarter, Reality Technologies 326

Form Generation

775 WorkMan, Reach Software 110

Graphics

772 Adobe Illustrator 4.0 for Windows, Adobe Systems 104
778 Micrografx Designer 3.1, Micrografx 114

Hypertext

779 SmarText 2.0, Lotus Development 114

Integrated Software

766 LotusWorks 3.0, Lotus Development 94

LAN Peripheral

776 Central Station, Artisoft 110

Mail Order

712 386/33 Cache, PC Brand 177
674 386-33C, Dynamic Decisions ... 175
699 386-33, Micro Generation 177
717 386-33 MX, Proteus Technology 177
646 386-33 Sonic, Ares Microdevelopment 175
723 386/33 Vantage, Strobe Computer 177
657 386/33 Warrior, C2 MicroSystems 175
654 386DX-33 Cache, Blue Dolphin Computers 175
667 386DX/33 CTI, CTI 175
640 AB 386/33, Absec Research 175
643 ACE 386-33, American Computer Express 175
642 Acma 386/33, Acma Computers 175
647 ACP 386-33, Arlington Computer Products 175
649 ACT 386-33C Cache System, Automated Computer Technology ... 175
668 Advantage 386-33 CX, CUI 175
645 AMS 386-33C, AMS 175
639 AN333C, Aberdeen 175
644 ARC 386/33C, American Research 175
648 ATC 386-33, A-Tronic Computer 175
831 Baseball League Statistics, Mighty Byte Computer 39
832 The Baseball Statbook, RJL Systems 39
833 Baseball Statistical Manager 2.95, Caboose Software Engineering 39
834 Baseball Statpak 4.0, Federal Hill Software 39
653 BCG 386/33, Blue Circle Group 175
652 BLK 386/33, Blackship Computer Systems 175
686 Blue Max 386/330, International Instrumentation 175
655 Blue Star 386DX-33, Blue Star Computers 175
650 BTI System 386-33C, Binary Technology 175
656 Bulldog 386-33, Bulldog Computer Products 175
658 CIN 3033 CSV Enterprise 33C, CIN 175
661 CMO 386/33, New MMI 177
835 Complete Team Series, Score Book Software 39
660 CompuAdd 333, CompuAdd Computer 175
662 Compudyne 386/33 DX, Compudyne 175
665 CompuTrend 386-33, CompuTrend Systems 175
666 Comtrade 386/33, Comtrade Electronics USA 175
669 Data 386i-33, Dataworld 175
770 DataEase Personal, DataEase Int'l 100
670 DEICO System 386DX-33, DEICO Electronics 175

FREE PRODUCT INFORMATION

Mail or Fax the completed card today. Fax to (413) 637-4343.

PC WORLD

NAME

TITLE

COMPANY

ADDRESS

CITY STATE ZIP

COUNTRY/POSTAL CODE (if not USA)

PHONE ( ) FAX ( )

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350										

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

☐ Check this box for your subscription to *PC WORLD*. You will be billed $19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

PRODUCT CATEGORY INFORMATION

For information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950										

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962

April 1992 **Expires Aug. 13, 1992** **S1**

Free Product Information

For quicker response, fax to (413) 637-4343.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Product Information Center
P.O. Box 5330
Pittsfield, MA 01203-9871

Free Product Information

For quicker response, fax to (413) 637-4343.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Product Information Center
P.O. Box 5330
Pittsfield, MA 01203-9871

FREE PRODUCT INFORMATION

Mail or Fax the completed card today. Fax to (413) 637-4343.

PC WORLD

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
COUNTRY/POSTAL CODE (if not USA) _____
PHONE ( ) _____ FAX ( ) _____

INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350										

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

☐ Check this box for your subscription to *PC WORLD*. You will be billed $19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

PRODUCT CATEGORY INFORMATION

For information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950										

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962

April 1992 **Expires Aug. 13, 1992** **S2**

Reader Service Number — Page Number

671 Dell System 333P, Dell Computer ... 175
762 Dell System 486P/20, P/25, P/33; Dell Computer ... 88
651 DeskStation Model 333C, BitWise Designs ... 175
672 Destiny 386/33, Destiny Computer ... 175
673 DT 386-33, Diamond Technologies ... 175
679 EiSys 386-33, G.C.H. Systems ... 175
675 EPS 386-33, EPS Technologies ... 175
659 Falcon 333, Club American Technologies ... 175
676 FastData 386/33, FastMicro ... 175
677 FCS 386-33, First Computer Systems ... 175
836 File Clerk Baseball, Landrum Software ... 39
729 Flash Cache 386-33, Tri Star Computer ... 177
734 Flex 386/33, USA Flex ... 177
678 Gateway 2000 386/33, Gateway 2000 ... 175
680 HD386-33C, HD Computers ... 175
681 HIQ 333 DX, High Quality Systems ... 175
682 HTS 386 Deluxe System, High Tech Supply ... 175
685 IDS 333i, International Data Systems ... 175
696 Impact 386/33+D, Mega Computer ... 177
683 Insight 386-33 Cache, Insight Computer ... 175
684 INT 386-33, Intelec ... 175
687 Iverson 386/33, Iverson Computer ... 175
688 JCC 386-33, JCC Systems ... 175
664 Kandu 386-33, Computer Square ... 175
842 KCC 386-33, Kenosha Computer Center ... 175
689 Key 386-33, Keydata Int'l ... 177
690 Kris System 38M, Kris Technologies ... 177
692 Legatech 386-33, Legatech Computers ... 177
693 LodeStar 386/33, LodeStar Computer ... 177
694 LSI 386/33 SVG, Lucky Computer ... 177
705 M333, MIS ... 177
730 Maxxima 386/33, Tri State Computers ... 177
697 MCC 386-33, Microcomputer Concepts ... 177
698 Micro Express ME 386-33, Micro Express ... 177
703 Mile Hi Model 386-33, Mile Hi Micro Distributing ... 177
704 Miracle Computer 386/33, Miracle Computers ... 177
695 MT 333-P, Maple Leaf Computer ... 177
702 MT 386/33, Micro Tough ... 177
700 MX 333, Micro Symplex ... 177
706 Myoda 386-33, Myoda ... 177
709 N333 System, Netis Technology ... 177
707 Naga 386/33, Naga Systems ... 177
708 NCI 386/33, National Computer ... 177
641 Nobel 386/33, Accel ... 175
710 Northgate 386/33, Northgate Computer Systems ... 177
711 Novas Optimum 386-33, Novacor ... 177
714 PC Turbo 386/33, PC Turbo ... 177
715 Peregrine 386/33, Peregrine Computers ... 177
716 Poly 386-33DX, Polywell Computers ... 177
691 Profex 333, Lanwise ... 177
719 Royal 386-33, Royal Computer ... 177
720 Sai 386/33, Sai Systems Laboratories ... 177
721 Santron 386-33 Cache, Santron Computer ... 177
722 Solidtech 386-33, Solidtech ... 177
838 Stats Pack, All American SportsWare ... 39
724 STI 386-33, Sunnytech ... 177
725 Swan Technologies 386/33, Swan Technologies ... 177
726 Syntax 386-33, Syntax Computer ... 177
727 Sysper 386/33 Cache, Sysper Technologies ... 177
728 Tangent 333C, Tangent Computer ... 177
701 Telesis 386-33, Micro Telesis ... 177
713 Touche 386/33, PC Pros ... 177
731 True Data 386/33, True Data Products ... 177
663 Ultra 386-33C, Computer Market Place ... 175
732 Ultra-Max 386-33, Ultra-Comp ... 177
733 USA Electronics 386/33, USA Electronics ... 177
735 U.S. Turbo 386-33, U.S. Turbo System ... 177
736 V-COM 386/33C, V-COM ... 177
737 Vektron PSY 386/33C, Vektron Int'l ... 177
738 Zeos 386-33, Zeos Int'l ... 177

Operating System/ Environment

786 Citrix Multiuser 2.0, Citrix Systems ... 115
637 DR DOS 6.0, Digital Research ... 218
638 MS-DOS 5.0, Microsoft ... 218

Presentation Graphics

777 Persuasion 2.1 for Windows, Aldus ... 114

Printer

749 Bézier BP4040, Bézier Systems ... 130
750 Brother HL-4V, Brother Int'l ... 130
751 Canon LBP-4 Plus, Canon USA ... 130
740 C.Itoh ProWriter CI-4, C-Tech Electronics ... 122
752 C. Itoh ProWriter CI-8E, C-Tech Electronics ... 130
763 Dataproducts LZR 1560, Dataproducts ... 90
741 Epson ActionLaser II, Epson America ... 122
754 Hewlett-Packard LaserJet IIIP, Hewlett-Packard ... 130
742 Hewlett-Packard LaserJet IIP plus, Hewlett-Packard ... 122
743 Kodak Ektaplus 7008, Eastman Kodak ... 124
755 Lexmark LaserPrinter 5e, Lexmark Int'l ... 130
744 Okidata OL400 LED Page Printer, Okidata ... 124
756 Okidata OL830, Okidata ... 130
761 Panasonic KX-P4430, Panasonic Communications and Systems ... 88
757 Panasonic KX-P4430, Panasonic Communications & Systems ... 130
745 Printer Works LX-29000, The Printer Works ... 124
825 Romeo Braille Embosser, Enabling Technologies ... 38
746 Sharp JX-9500, Sharp Electronics ... 126
747 Star Micronics LaserPrinter 4, Star Micronics America ... 126
758 Tandy LP 950, Tandy Computer Support ... 130
748 Texas Instruments microLaser Plus, Texas Instruments ... 126
759 Texas Instruments microLaser Plus PS17, Plus PS35; Texas Instruments ... 130

Scanner

809 3000 CL Plus, 8000 CLX; Advanced Vision Research ... 192
797 3000 GS Plus, 8000 GSX; Advanced Vision Research ... 192
822 Artec A4000C, Ultima Electronics ... 192
821 AV800, SIIG ... 192
800 The Complete Flatbed Scanner, The Complete PC ... 192
791 The Complete Page Scanner, The Complete PC ... 192
810 DS-3000, Chinon America ... 192
811 ES-300C, Epson America ... 192
795 FX-RS505U, Panasonic ... 192
805 FX-RS506U, FX-RS307U; Panasonic ... 192
799 IX-30F, Canon USA ... 192
820 JX-320, Sharp Electronics ... 192
815 MFS-3000C, MFS-6000C; Marstek ... 192
793 MS-II, Microtek Lab ... 192
817 Niscan Spectra, Nisca ... 192
804 PC Scan 3000, New Dest ... 192
806 Pentax IQ Scan (SB-L301), Pentax ... 192
814 Personal Color Scanner, Howtek ... 192
794 Personal Scan 100, New Dest ... 192
819 Phovos 300C, Prime Option ... 192
807 Phovos 600GS, Prime Option ... 192
818 PS-3000/OCR, Our Business Machines ... 192
798 PSX300g, Alps America ... 192
812 Scan 300/Color, Everex Systems (Abaton) ... 192
801 Scan 300/GS, Everex Systems (Abaton) ... 192
813 ScanJet IIc, Hewlett-Packard ... 192
802 ScanJet Plus, Hewlett-Packard ... 192
803 ScanMaker 600G, Microtek Lab ... 192
816 ScanMaker 600Z, Microtek Lab ... 192
792 TranScribe 300, Everex Systems (Abaton) ... 192
823 UC630, Umax Technologies ... 192
796 UF32, UF42; Umax Technologies ... 192
808 UG630, Umax Technologies ... 192

Scanning Software

851 AccuText 3.0, Discover 386 5.1; Xerox Imaging Systems ... 196
852 AdvanTex 2.2, Solution Technology ... 196
783 AVR ScanPack Bundle, Advanced Vision Research ... 115
853 CAT Reader Professional, Computer Aided Technology ... 196
854 Image-In Read 2.5, Image-In ... 196
855 OmniPage Professional 2.0, Caere ... 196
856 PC-OCR, Essex Software Publishing ... 196
857 Perceive 1.1, Ocron ... 196
865 PerForm Tracer, Delrina Technology ... 106
858 Read-It for Windows 2.1, Olduvai ... 196
860 ReadRight 2.01, ReadRight for Windows; OCR Systems ... 196
859 ReadStar 6, Inovatic ... 196
861 Recognize 2.0, New Dest ... 196
862 TypeReader, ExpaVision ... 196
863 WordScan Plus, Calera Recognition Systems ... 196

Security

785 MenuWorks Total Security, PC Dynamics ... 115

Spreadsheet

866 Excel 4.0, Microsoft ... 209

Statistics

831 Baseball League Statistics, Mighty Byte Computer ... 39
832 The Baseball Statbook, RJL Systems ... 39
833 Baseball Statistical Manager 2.95, Caboose Software Engineering ... 39
834 Baseball Statpak 4.0, Federal Hill Software ... 39
835 Complete Team Series, Score Book Software ... 39
836 File Clerk Baseball, Landrum Software ... 39
838 Stats Pack, All American SportsWare ... 39

Utility

824 B-Pop, Big for WordPerfect; Hexagon Products ... 36
781 InCommand 1.3, Inductive Logic ... 114
826 LP-DOS 5.0, Optelec U.S. ... 36
827 MAGic, MAGic Deluxe; Microsystems Software ... 38
774 MailBag, Folio ... 106
739 Whiskers Professional, Numbers & Co. ... 267
636 WorkSheet Optimizer, Baler Software ... 238
828 ZoomText, ZoomText Plus; AI Squared ... 38

Word Processing

601 Ami Pro 2.0, Lotus Development ... 149
602 DeScribe 3.0, DeScribe ... 150
603 Legacy 2.0, NBI ... 153
604 Word for Windows 2.0, Microsoft ... 156
605 WordPerfect 5.1 for Windows, WordPerfect ... 159
767 WordStar for DOS, WordStar Int'l ... 98
606 WordStar for Windows 1.0, WordStar Int'l ... 166

FAST MICRO Hardware 1-800-441-FAST

DISK DRIVES

CD-ROM
Hitachi Ext. 680mb Kit.....499
Sony Int. 680mb Kit.....349
Book of Mammels / Encyclopedia ..49/69
MS Bookshelf, Stat. Pack,
World Atlas & Consultant CDs.....99
Colorado
DJ-10 40-120mb Int. Tape.....199
DJ-20 80-240mb Int. Tape.....259
Extemal Kit w/AB11 99

NEC CD Gallery $559
Get a whole CD set-up at one low price. Includes NEC CDR-36 CD-Rom player, a pair of amplified speakers, stereo headphones and XT/AT interface. Also includes Grolier Electronic Encyclopedia, Time Table of History, World Atlas, TIME Almanac, National Geographic Mammels, Great Cities of the World, and Battle Chess CD's

Conner (see FastData IDE controllers)
CP3044 40mb IDE 28ms.....199
CP3104 100mb IDE 25ms.....349
CP3208 200mb IDE 25ms.....599
DTC
6280 ESDI 16bit HD/FD Cont.....119
6280-15T 15mbit/sec transfer rate 169
Micropolis (see DTC Controllers)
MC1664 345mb HH ESDI 14ms.....999
MC1568 668mb FH ESDI 14ms 1399
MC1518 1.3gb FH ESDI 14ms.....1399
NEC Ext. CD Gallery w/CDR36.....559
Plus Development
HardCard IIXL 50mb 9 ms 16bit.....299
HardCard IIXL 105mb 9 ms 16bit.....469

Toshiba 1.44mb Floppy $59
Complete with mounting brackets and installation instructions, this Toshiba works in all true 286 & 386 compatibles. Will also read/write/format 720K 3.5" disks. Rails, add $5.

Seagate
30MB XT Kit ST238 w/ cont. 249
40MB AT ST251-1 MFM Drive.....229
40MB AT ST351X 28ms IDE Drive...179
89MB ST3096A 19ms IDE Drive .....Call
125MB ST3144A 19ms IDE Drive.....359
210MB ST1239A 15ms IDE Drive.....599
330MB ST2383E 16ms ESDI Drive 1199

Seagate 89mb AT Kit $319
IDE performance, big 89 megabyte capacity, 19ms access time and 5 mbps transfer rate make this a great buy. Controller, cables and rails are included to make installation fast and easy.

Teac
1.2MB 5.25" Floppy.....59
1.44MB 3.5" Floppy.....59
Toshiba
360K 5.25" Floppy (Black) 59
1.2MB 5.25" Floppy 59
1.44MB 3.5" Floppy 59
Western Digital
WD93044 40mb IDE 28ms .....Call
WDAC280 80mb IDE 20ms .....Call
WDAP4200 200mb IDE 20ms.....599

MODEMS & FAX

ATI
2400 ETC V.42 Int. / Ext. 129/155
9600/E External MNP V.42bis 369
Everex 2400B Int MNP Modem 65

ATI 9600ETC•E $369
ATI delivers speed and accuracy with the 9600 Etc•E! It includes V.42, LAP-M, and MNP error correction combined with MNP/5 and V.42 bis data compression to provide total high speed throughput. It features automatic line speed correction, synchronous/asynchronous communication and automatic feature negotiation with connecting with other modems.

Hayes
JT FAX 4800B Internal 139
Personal Modem 2400 w/Prodigy 119
Pocket Edition 2400 Modem.....119
Intel
Classic 2400 Modem Int./ Ext.....139/169
Satisfaxtion Classic - Intl 9600.....369

OmniLink Laser $379
Don't settle for curled-up thermal paper or tie up your PC to receive faxes - get OmniLink Laser. It connects to your phone line and HP compatible laser and receives and prints your faxes. You can still print anytime you want and OmniLink will store up to 30 faxes while your printing. Plus, its a standard 2400/9600 modem/sendfax and software is only $89.

Practical Peripherals
2400B Int Modem Std/MNP.....125 /159
PM9600SA Ext. V.32/V.42bis.....449
USRobotics
2400 Sportster Int / Ext. .....119 /135
2400 Sportster MNP Int / Ext.....159 /189
9600 Sportster Int / Ext. .....399 /449
Courier HST 14,400 Int. / Ext. ...539 /559
Courier HST 14,400 Dual Std Ext. 799
ZOOM
HC2400 Internal.....69
2400 V.42bis External Modem 125
9624 Send/Receive Int Fax Modem ..105

MICE & INPUT

Key Tronic 101 Keyboard.....59
Professional Mouse.....59
Logitech
Mouseman Serial righthand.....59
Mouseman Serial with Windows.....109
Mouseman Bus righthand.....65
Mouseman Cordless 85
ScanMan 32 149
ScanMan 32 with Catchword.....199
ScanMan 256 for Windows.....259
Trackman Serial 65

Microsoft Mouse $83
Ergonomic design and 400 DPI accuracy make this the world's most popular mouse. Microsoft design and mouse utilities assure compatibility with the programs you use most.

Microsoft
Serial or Bus Mouse only 83
Serial or Bus with paint 95
Serial with Windows.....147
Z-Nix Super Mouse II w/Windows.....79

International orders welcome Fax 602-437-8622

NETWORKING

Artisoft/Lantastic
Lantastic Two Station Starter Kit:
2 Mbps.....349
Ehternet.....469
Ethemet Additional Stations 209
Eagle NE2000 2 Station NW Lite Kit...459
FastData NE2000 16 Bit 10-BaseT 109
Novell
Netware Lite 65
Netware Lite with DR DOS 6.0.....75

BOARDS & CHIPS

Adlib Gold 1000/2000.....185 /235
ATI Stereo F/X 129
Brown Wagh
Sound Blaster.....105
Sound Blaster Pro (stereo & MIDI)....179
Cyrix 387-DX25 /33.....179/189
387-SX16 /20 /25.....109 /119 /129
Everex
RAM3000 16 bit - w/ 0K (max 3mb) 75
RAM3000 16 bit - w/ 1mb 125
RAM8000 16 bit - w/ 0K (max 8 mb) .169
RAM8000 16 bit - w/ 2mb 269
Intel 287XL.....75
387-DX25 or 33.....209
387-SX16 / 20.....119 /129
Memory - 1mb SIMMS 80ns.....$49
Memory - 1mb chips 80ns set of 9 .....$59

FASTDATA PRODUCTS

FastData 16 Bit VGA $49 $69
256K vers. 512K vers.
The FastData 16 bit VGA card features 256K or 512K of video memory, does CGA, EGA, & VGA up to 1024x768 (512K vers.) and comes with drivers for popular software, including Windows. It comes with a 30 day money-back guarantee.

FastData 16bit 1mb VGA 89
FastData CGA Card 35
FastData MGP Card.....29

FastData Monitors

Your best value, guaranteed! We have a full line manufactured for us by manufacturers like Hyundai and Matsushita. As with all FastData branded product, you get a full 30-day money back satisfaction guarantee. Shown is the VGA color.

FastData Boards
9600B SendFax w/ 2400B Modem 79
9600B Send/Receive Fax w/2400B 99
Ethernet 16bit 10Base-T 109
IDE 16 Bit 1:1 Hard/Floppy Disk Cont....29
IDE HD/FD w/Par/2 Serial/Game 39
Parallel/2 Serial/Game Card.....29
RLL 16bit 1:1 Hard/Floppy Disk Cont. ...59
XT 1.44 Dual Floppy Controller.....35

FastData 2400 Baud Modem
$49 The FastData 2400 baud internal modem is fully Hayes compatible and can be configured to COM port 1-4. It has an internal speaker, is auto answer & auto dial, and comes with communications software.

FastData Monitors
14" Amber or White Monochrome 99
14" White VGA Monochrome 119
14" CGA Color .52 dot pitch 199
14" Super VGA 1024 x 768i .28 dp. 299
14" Non-Int VGA 1024 x 768 .28 dp....369

VIDEO & MONITORS

ATI
Graphics Vantage 1mb 389
VGA Basic 16 / Integra .....75 /129
VGA Wonder XL 256K / 1mb ....169 /229
8514 Ultra 8514+VGA 1mb 599
Diamond
SpeedStar Plus HiColor 1mb.....175
Stealth VRAM HiColor 1mb 265
Everex EGA 480 Card.....69
FastData Monitors & Cards.....see above
Hercules Graphic Card +.....Call
MAG Colorview/15.....Call
Mitsubishi
1410 EGA.....279
Diamond Scan 1381 499
Diamond Scan 16L 919
NEC
Multisync 3FGX.....599
Multisync 4FG 749
Multisync 5FG 1299
Orchid
ProDesigner II 1mb.....219
Farenheit 1280s HiColor.....319
Panasonic C1381 VGA 329
Seiko CM1440 /CM1450.....489 /569
Sony 1304 Multiscan.....599
Video 7
VGA 1024i 256K / 512K .....119 /139
V-RAM II VGA 512K / 1mb.....249 /319
Zenith 1492.....599

PRINTERS

Canon
BJ10XE Portable.....319
BJ300 / BJ330 Ink Jet.....459 / 599
LBP-4 Plus 799
Citizen
200GX 9 Pin.....159
GSX-130 24 Pin 249
GSX140+ 24 Pin 295
GSX145 24 Pin Wide.....395
PN48 Std / Pro .....299 /329
Co Star LabelWriter II/Plus .....179 /289
Epson.....Call
Memory Products
HP II, IIP, or III 1/2mb Upgrade 99/129
OKI 400 1/2mb Upgrade.....129/189
Pana. 4420, 4450i 1/2mb Upg....119/169
NEC
P3200 24 Pin.....239
P3300 24 Pin Wide 339
P6200 / 6300.....419 / 59
Colormate PS.....4599
Silentwriter 2 Model 90 1495
Okidata
Okilaser 400 659

Panasonic 4410 Laser $649

All new, the Panasonic 4410 includes 5 PPM speed, HP IIP emulation, a large 200 sheet paper tray and 28 standard fonts. It works with all current major software programs, has 512K of upgradable memory, and has an EZ-set LCD operator panel. It is slightly smaller than the 4420 shown.

Panasonic
KXP1180 9 Pin.....149
KXP2180 Quiet 9 Pin-Color option.....179
KXP1123 24 Pin.....199
KXP2123 Quiet 24 Pin-Color option....259
KXP1124i High Speed 24 Pin 279
KXP1624 24 Pin Wide 339
KXP2624 High Speed Quiet 24 Pin 399
KXP4410/4430 Laser 649/Call
KXP4450i Laser 1069
KXP4455 Laser 1699
QMS PS410.....1699
Seiko Smart Label Printer Plus.....167
Star
NX1001 139
NX2410 / 2415.....189 / 369
Texas Instruments
Microlaser PS17.....1199
Microlaser PS35.....1499
Microlaser PS35 Turbo 1999

COMPUTER BOOKS - ALL AT 25% OFF PUBLISHERS' PRICES

Getting Started with MS-DOS 5 $13
A self paced introduction to DOS 5, this book features the DOS 5 Shell. It teaches simple techniques for organizing files, running applications and managing a hard disk.

DOS BOOKS
ABC'S of DOS 5 -*Sybex* ✘ 15
DOS 5 Instant Ref. -*Sybex*.....10
Getting Started with DOS 5 -*Microsoft* ✘ ...13
Mastering DOS 5 -*Sybex*.....28
PC Mag DOS 5.0 Tech. & Utilities.....30
PC Mag Guide to DOS 5 -*ZD Press*.....19
Que's MS-DOS 5.0 User's Guide 22
Running MS DOS 5 -*Microsoft*.....19
Supercharging MS-DOS 5 -*Microsoft*.....19
SPREADSHEET BOOKS
ABC'S of 1-2-3 2.3 -*Sybex* ✘.....15
ABC'S of 1-2-3 Window ✘ 15
Mastering Excel 3.0 -*Sybex*.....21
PC Mag Guide to Quattro Pro 3.0.....19
PC Mag Guide to 1-2-3 Release 2.3.....19
PC Mag Guide to 1-2-3 for Windows 19
PC Computing Guide to Excel 3.0.....19
Quattro Pro 3 Companion -*Microsoft*.....19
Running Excel 3 -*Microsoft*.....21
Understanding 1-2-3 Release 2.3.....20
Using Excel 4.0 -*Que*.....21

WINDOWS BOOKS
Mastering Windows 3.0 -*Sybex*.....19
PC Mag Guide to Windows -*ZD Press*.....19
PC Mag Windows Tech. & Utilities 30
Running Windows -*Microsoft*.....19
Windows 3. 0 Beyond the Basics -*Que* 15
Windows 3. 0 QuickStart -*Que* ✘.....15
WORD PROCESSING BOOKS
ABC'S of WordPerfect 5.1(DOS) ✘.....15
ABC'S of WordPerfect Windows ✘ 20
Mastering Ami Pro 2 -*Sybex*.....20
Mastering WordPerfect 5.1(DOS).....21
Mastering WordPerfect Windows.....21
Mastering Word for Windows 2.0.....21
PC Mag Guide to AmiPro -*ZD Press*.....19
PC Mag Guide to Prof. Write Plus.....19
PC Mag Guide to Word for Windows.....19
Running Word 5.5 -*Microsoft*.....19
Running Word for Windows -*Microsoft*.....19
Using WordPerfect 5.1 -*Que*.....21
WordPerfect Windows Quickstart -*Que* ✘ ..21
Word for Windows Companion -*MS*.....21

PC Magazine Guide to 1-2-3 Rel. 2.3 $19
Self peced tutoriels and 100's of illustrations demonstrate file management, cell addressing, renges, grephs, and database design. Also covers macros and statistics.

GENERAL BOOKS
Mastering Microsoft Works -*Sybex*.....20
Official Guide to Prodigy -*Microsoft*.....15
PC Computing Guide to Quicken.....19

Using WordPerfect for Windows $21
The perfect introduction for WP Win, this text cover ell basic concepts end sophisticated features. This complete tutorial & reference is ideal for all levels.

PC Mag Guide/Notebooks & Laptops 22
PC Mag Buyer's Guide to
PC's Printers & Monitors -*ZD Press*.....22
Upgrading & Repairing PC's -*Que*.....22
Using ProComm Plus -*Que*.....19
Works 2 Companion -*Microsoft*.....17
PUBLISHING & GRAPHICS BOOKS
ABC'S of AutoCAD 11 ✘.....17
PC Computing Guide to
Harvard Graphics for Windows 19
Mastering AutoCAD 11 -*Sybex* 26
Mastering CorelDRAW 2 -*Sybex*.....20
Mastering Harvard Graphics 3 (DOS) 20
Mastering Harvard Graphics Windows.....20
Mastering PageMaker 4 -*Sybex*.....20
Using PageMaker 4 -*Que*.....22
Ventura Publisher for Win Guide -*MS*.....22

UTILITIES & NETWORK BOOKS
PC Mag Guide to Connectivity 30
PC Mag Netware Tech. & Utilities.....30
Understanding PC Tools 7 -*Sybex*.....20
Understanding Norton Desktop.....20
Understanding Norton Utilities 6.....20
LANGUAGE & DATABASE BOOKS
GW Basic User's Guide &. Reference.....15
Learn C Now -*Microsoft* ✘ 30
Mastering FoxPro 2 -*Sybex*.....22
Mastering Paradox 3.5 -*Sybex*.....20
Mastering QuickBasic 4.5 -*Sybex* 17
PC Mag T Pascal 6.0 Tech. & Utilities.....26
PC Mag Basic Tech. & Utilities.....22
Running QBasic -*Microsoft*.....17
QuickBasic Bible -*Microsoft*.....19
Understanding dBase IV 1.1 -*Sybex*.....21
Understanding Clipper 5.01 -*Sybex* 22
Using Paradox 3.5 -*Que*.....22
Using Borland C++ -*Que* 22
Using QBasic -*Que*.....22
✘ - Books ideal for beginning users.

Running Excel $21
Packed with examples, tutorials, end euthoritative tips, this book features step-by-step instructions backed by detailed reference information. It covers from the basic through advanced features.

FAST MICRO Software 1-800-441-FAST

DATABASE & FORMS

askSam 5.0 209
Clarion Personal Developer 45
Clarion Professional Developer 3.0 449
Clipper 5.01 489
DataEase 509
dBase III+ 419
dBase IV 449
dBXL Diamond 129
Formbase 299
FormTool Gold 52
Formfiller 79
Foxbase Plus 179
FoxPro 2.0 449
Paradox 3.5 449
Paradox Competitive Upgrade 165

Paradox SE $65

New Paradox SE is a special version of the award-winning database management software designed specifically for small business and home use. Just enter your data and Paradox SE lets you query, sort, even write reports and form letters. Easy to use and learn, you can create multi-table data-entry applications without programming.

Paradox SE 65
Per:Form Designer & Filler 89
Personal Rbase 79
Q & A 4.0 249
RapidFile 189
Rbase for DOS 447
Reflex 159

ENTERTAINMENT

Carmen SanDiego Deluxe Edition 45
F-19 Stealth Fighter 38
King's Quest 5 (VGA Vers.) 38
Leisure Suit Larry III 35
Microsoft Flight Simulator 38
Aircraft & Scenery Designer 27
PC Globe or PC USA 35
Simcity 28
SimEarth 39
Wing Commander I / II ....39 / 45

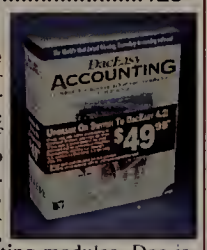
DESKTOP PUBLISHING

Adobe Postscript Cart. for HPLJ-II 239
Bannermania 21
Express Publisher ....Call
Microsoft Publisher for Windows 129
Pagemaker 4.0 489
PFS:First Publisher 89
Printshop 33
Publisher's Paintbrush 279
Publish It! 129
Ventura Publisher Gold / Windows 499

FINANCIAL

ACCPAC BPI Value Pak 359
Bedford Integrated Acct. 119
DAC Accounting 4.2 85
DAC Bonus Pack 4.2 119
DAC Accounting Upgrade 45
Managing Your Money 125

DacEasy $47 Accounting Upgrade



Upgrade or switch from your older DacEasy version or other accounting software (or even your spreadsheet if you use it for accounting) to the new DacEasy 4.2. Includes General Ledger, A/P, Cash Management, A/R & Billing, Inventory, Purchase Order and Budgeting modules. Dac is truly easy to use, with context-sensitive and indexed help, mouse support, and pull-down menus. It even includes a report generator & built-in graphics.

Microsoft Money for Windows 45
Money Matters 29
One Write Plus G/L, A/P & A/R 109
Pacioli 2000 29
Peachtree Crystal Acctg. Windows 175
Peachtree Complete III 139
Peachtree with Data Query 209
Quicken DOS / Windows ....41 /41
The Manager's Organizer 139
Timeslips III 179
TurboTax DOS /Windows ....45 /59
Wealth Builder 89

We Ship Air at Ground Rates.

GRAPHICS

Autosketch 3.0 139
Corel Draw 2.0 349
Design CADD 3-D 185
DrawPerfect 259
Freelance Graphics 4.0 299
Freelance Competitive Upgrade 89
Generic 3D Drafting 199
Generic Cadd Level 2 Starter Kit 85
Generic Cadd 6.0 279
Harvard Graphics ....Call
PC Paintbrush IV Plus 109

PC Tools $99 Deluxe 7.1

PC Tools 7.1 is the perfect set of utilities for DOS 5. Includes new application menu system, remote operation of another PC, advanced data recovery and an enhanced Backup in DOS and Windows versions. Also included is the award-winning Dos Shell and Backup and new Windows utilities.

INTEGRATED

First Choice 95
Framework XE 95
Geoworks Pro 115
LotusWorks 89
SmartWare II 417
Symphony 2.2 489
Works 89
Works w/ MS Serial Mouse 149

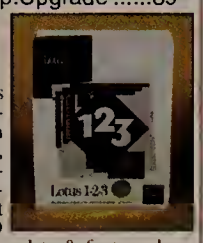
PROGRAMMING

Borland C++ 289
Borland ObjectVision for Windows 91
Turbo Pascal Dos/Windows 90/119
Macro Assembler 95
Microsoft C Compiler 299
Quick Basic 60
Quick C or Quick Pascal 60
Visual Basic for Windows 125
Windows Developer's Kit 309

SPREADSHEETS

Allways 115
Excel for Windows 299
Lotus 1-2-3 version 2.3 325
Lotus 1-2-3 version 3.1+ 399
Lotus 1-2-3 2.3 or Comp.Upgrade 89

1-2-3 for Windows $379



Lotus 1-2-3 for Windows is everything a Windows spreadsheet was meant to be. Which means it's simple, flexible, graphical, and uniquely powerful. Includes SmartIcons, one-click shortcuts for your most frequently used shortcuts. 3D features and integrated graphics, data & fonts make your work get noticed! You can upgrade from your present spreadsheet through FastMicro for just $89.

Quattro Pro 3.0 299
Quattro Pro 3.0 Comp. Upgrade 89
Quattro Pro 3.0 SE 47
Supercalc 5.1 89

WORD PROCESSORS

Facelift for WordPerfect 57
Grammatik IV 55
LetterPerfect 119
Multimate 4.0 239
Professional Write 159
Publisher's PowerPak / WordPerfect 45

WordPerfect for Windows $249

The #1 Word Processor comes to Windows! WordPerfect 5.1 for Windows is simple, powerful, and fun to use. WPWin includes customizable ButtonBar™, Dynamic Data Exchange, and full grahical integration. Upgrade from WP for DOS for $77 or other word processor for just $115!

Rightwriter DOS/Windows 55/55
Word 209
WordPerfect 5.1 239
WordPerfect for Windows 249
WordPerfect for Windows Upgrade 115
WordPerfect Add'l Station 159
WordPerfect Office 89
WordStar Professional 187
Writer's Toolkit 79

UTILITIES

386 MAX 59
Address Book Plus 47
Calendar Creator Plus 47
Carbon Copy Plus 107
Central Point Backup 75
Checkit 79
Company Ladder 45

MS-DOS 5.0 Upgrade $55

The new Microsoft DOS 5.0 frees 45K or more for DOS on 286 & 386 PC's. It includes a new Shell, Undelete and Unformat, new Editor and more. Also includes Qbasic, Command Line Help, new Backup and Windows enhance-ments. Plus, you can install it on your drive without reformatting, even on Networks. This official upgrade pack requires that you simply have an older command.com on your drive!

Control Room 69
CoreFast 60
Desqview 2.4 75
Desqview 386 2.4/6.0 125
Direct Access 57
Disk Manager Dos / Novell ....36 /109
Disk Optimizer 29
DR DOS 6.0 65
Fastback Plus 109
GoScript 3.0 89
HiJaak 2.0 95
InfoSpotter 45
Labels Unlimited 52
Laplink Pro 89
Microsoft Learning DOS 32
MS-DOS 5.0 Upgrade 55
Norton AntiVirus 79
Norton Backup 85
Norton Commander 90
Norton Utilities 6.0 109
PC Anywhere IV 109
PC Tools Deluxe 7.1 99

LapLink Pro $89

In addition to fastest and easiest laptop to PC or PC to PC file transfers, new LapLink Pro ends the hassles of modem file transfers too! Its remote install feature allows you to transfer files to a PC without LapLink Pro. Includes parallel & serial transfer cables.

Personal Lawyer 34
P.D. Queue 55
PFS:Preface 47
Pop Drop Plus 53
PrintRite 19
ProComm Plus 67
Prodigy 25
QA Plus 85
QEMM 386 6.0 57
QRAM 2.0 49
SideKick 2.0 53
Sideways 55
Smartcom Exec 69
SpintRite II 69
Super PC Kwik 43
Virex-PC 75
XTree Gold 2.0 89

WINDOWS SOFTWARE

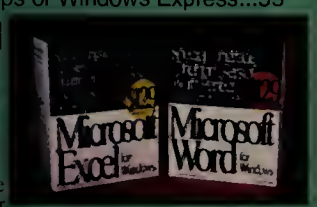
1-2-3 for Windows 399
1-2-3 for Windows Comp. Upgrade 89
3-D Charts to Go for Windows 55
ACCPAC Simply Acctg.for Windows 119
Adobe Illustrator ....Call
Adobe Type Sets ....Call
Adobe Type Align 59
Adobe Type Manager 58
Adobe Type Manager Plus Pack 115
After Dark for Windows 25
Ami Pro 2.0 279
Ami Pro 2.0 Competitive Upgrade 89

Microsoft Office $447

This special bundle includes the leading Windows applications, Excel, Word and PowerPoint all in one. Excel is the tops rated graphical spreadsheet, Word is the #1 selling Windows word processor and PowerPoint is the top presentation package. Act now and you will save half the cost if purchased separately.

Asymetrix Toolbook 279
BeckerTools 77
Bitstream Facelift 57
Corel Draw 2.0 349
Correct Grammar 57
Current 209
DBfast/Windows 279
Excel 299
FaceLift 57
Form Publisher 139
Freehand ....Call
Grammatik IV for Windows 55
HDC First Apps or Windows Express 55

MS Excel or Word Upgrade $129 ea



Upgrade from the Spreadsheet or Word Processor you're using now to the award-winng Excel or Word for Windows. Excel 3.0 is the leading spreadsheet for Windows and includes Toolbat™, which simplifies many tasks to the click of a mouse. New Word for Windows 2.0 adds many new features to the top-selling Windows word processor. To upgrade, you must fax us the the title page from WordPerfect, 1-2-3 or other qualifying software.

Instant Orgchart! 119
JustWrite 75
Lotus 1-2-3 for Windows 379
Micrografx Designer 449

Windows Draw! $95

Who says powerful Windows drawing programs have to be expensive? Not with Windows Draw!, the fun-to-use product from Micrografx. Includes special effects, such as gradients and fit text to curves, object manipulation, and outline fonts. The 2600 customizable clip-art images alone are worth the price!

MicroPhone II 89
Microsoft Ent. Pack I, II or III 27
Microsoft Mouse w/ Windows 3.0 147
Microsoft Office (Word/Excel/Powerpoint) 447
Microsoft Powerpoint for Windows 309
Microsoft Productivity Pack 39
Microsoft Windows 89
Microsoft Windows Developer's Kit 309
Microsoft Word for Windows 299
M.Y.O.B. 129
Norton Backup 85
Norton Desktop 89
On Target 239
PackRat 3.0 239
Pagemaker 4.0 489

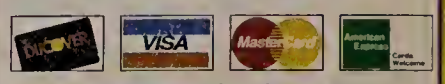
MS Works for Windows $129

New Microsoft Works for Windows is the easy-to-use integrated software for Windows that's designed with small business users in mind. It includes a Word Processor with Speller and Thesaurus, Spreadsheet with charting, Database with report generator, and Drawing toolsto design graphics you can paste into your word processing document. On-line help is a click away and WorksWizards guides you through the process of creating custom documents.

Persuasion 319
Per:Form Pro 179
PFS:WindowWorks 109
Pro Write Plus 159
Project for Windows 429
Publisher's Powerpak 45
Publisher's Paintbrush 279
Quicken for Windows 41
Quattro Pro for Windows ....Call
RightWriter for Windows 55
Turbo Pascal for Windows 119
Ventura Publisher 499
WideAngle for Windows 75
Winconnect 59
Windows Draw 95
WinFax Pro 69
WordPerfect for Windows 249

FASTMICRO

For Pricing on Other Products or to Order, Call Toll-Free (800)441-3278



TERMS: No Charge for Visa, MasterCard or Discover Card. All orders up to 20 pounds are shipped via Federal Express. Minimum order: $50. Shipping & handling charge: 3% (Min. $6). Product warranties, offers & claims are handled by the manufacturer (all FastData branded products are warranteed through FastMicro). Compatibility is not guaranteed (except on FastData products). No returns on used items (except FastData branded products). All opened returns are subject to 15% restocking fee (except FastData branded products). DOA's repaired or replaced at our option. Call for return authorization (RA) before returning product. Shipping is not refundable. Sorry, no COD's. Personal/company checks delay shipping. AK, HI, & APO addresses add $15 per box. Prices/availability subject to change. Purchase orders accepted (no surcharges) from approved corporations only. AZ orders add 6.7% tax.

Mailing Address: FastMicro
4405 E. Baseline Road, Phoenix, AZ 85044
To place orders call: 800-441-3278
For customer service call: 602-431-8100
Canada/Arizona call: 602-431-8200
FAX: 602-431-8300

Circle 100 on reader service card

WE ACCEPT PO'S FROM QUALIFIED FIRMS

M E M O R Y

NO SURCHARGE FOR MC, VISA & DISCOVER

★★ CALL TOLL-FREE 800-433-3726 ★★

★ HOT BOX ★

Cyrix Math Chip:
83D87-16DX, 2-3x faster than Intel — **$99.00**
Wordstar 6.0 or Wordstar 2000 — **$139.00 ea.**
IBM Laser 4019, 4019E:
3.5Meg upgrd., 1038675 — **$189.00**
Compaq 113132-001, 4Meg — **$199.00**
Turbo 25:
gives you 150 fonts for HP Printers — **$99.00**
We have memory for all laser printers.
(SEE BELOW)

Individual D-RAM Chips

MEMORY FOR IBM & APPLE

	60NS	70NS	80NS	100NS
1Meg x 1	5.25	5.00	4.75	4.40
4Meg x 1	—	—	34.00	—
1Meg x 4	—	—	26.00	—
1Meg x 4 (Zip Pack)	—	—	27.00	—
256 x 4 (Video Zip)				14.95
256 x 4	6.00	5.75	5.60	5.55
256 x 1	2.65	2.40	2.00	1.70
64 x 4	—	—	3.25	3.00
64 x 1	—	—	—	1.50

SIMM MODULES (Add $5.00 for SIPP)

	53NS	60NS	70NS	80NS	100NS
1Meg x 9 (IBM)	CALL	51.00	48.00	45.00	41.00
4Meg x 9 (IBM)	CALL	199.00	169.00	159.00	—
256 x 9 (IBM)		23.00	21.00	18.00	17.00
512 x 36 2Meg (72 PIN)				129.00	
1 x 36 4Meg (72 PIN)				199.00	
2 x 36 8Meg (72 PIN)				459.00	
4 x 36 16Meg (72 PIN)				949.00	

INTEL Math Chips

8087	59.00	80387-16SX	149.00
8087-2	79.00	80387-20	179.00
8087-1	119.00	80387-20SX	159.00
80287-XL	99.00	80387-25SX	CALL
80287-XLT	119.00	487-SX20	549.00
80387-16	149.00	80387-DX *(NEW)*	229.00

IIT ADVANCED MATH CO-PROCESSOR

• 2-3 times faster than Intel • Plug & object code compat. w/Intel
• *5 Year Warranty*

2C87-8MHz — 84.00	2C87-12.5MHz — 99.00
2C87-10MHz— 89.00	2C87-20MHz — 109.00

CYRIX FASMATH PROCESSOR

• Programs executed up to 3X faster • Plug & object code compat. w/Intel
• *PC Week* ★ rated #1 over all math chips
5 Year Warranty

83D87-16MHz — 99.00	83D87-33MHz — 204.00
83D87-20MHz — 195.00	83S87-16SX Ver. — 149.00
83D87-25MHz — 199.00	83S87-20SX Ver. — 159.00
83D87-40MHz — 239.00	83S87-25SX Ver. —179.00

AST MEMORY MODULES

MODEL#	AMT. UPGRADED	AST PART#		PRICE
Premium 386/25, 16 SX	1Meg	500718-001		65.00
Premium 386/33	1Meg	500718-002		69.00
Premium II	1Meg	500780-003	WPB	85.00
386SX20, 486-25, 25E, 33	4Meg	500780-004	WPB	209.00
Premium Tower, 386/33TE, 486/25TE, 486/33TE	8Meg	500780-001	WPB	418.00

ZENITH MEMORY UPGRADES

MODEL#	AMT. UPGRADED	ZENITH PART#	PRICE
Z386/33, 25, 20	1Meg	ZA3800ME	89.00
Z386/33, 25, 20	4Meg	ZA3800MK	229.00
Z248, Z286LP Z386SX	2Meg	Z-605-1 *modules*	119.00

IBM PS/2 SIMM MODULES

IBM PART NO.	WORKS WITH MODEL NO.	L.A. TRADE'S CDMPT. PRICE
30F5348 (512K)	30-286	38.00
30F5360 (2Meg)	30-286, 50 MTHR BD.	105.00
6450375 (1Meg)	80-041	65.00
6450379 (2Meg)	80-111, 311	129.00
6451060 (4Meg)	80-A21, A-61, 80-A31, 80-111, 80-311	239.00
6450603 (1Meg)	35SX, 40SX, 55SX, Model-70's, P-70	65.00
6450604 (2Meg)	35SX, 40SX, 50Z, 55SX, 55LS, Model 70-E, 061, 121, P-70	95.00
6450608 (2Meg)	70-A21, A-61, B-21, B-61	104.00
78X8955 (128K)	25	35.00
34F2933 (4Meg)	35SX, 40SX, 55SX, 65SX	189.00
87F9977 (4Meg)	55SX, 55LS, 65SX. 40SX, 35SX, 35LS	189.00
1383679 (512K), (2Meg)	P/S1	50.00, 119.00
6450902 (2Meg)	57SX,90, 95, P-75	115.00
6450128 (4Meg)	57SX, 90, 95, P-75	199.00
6450129 (8Meg)	35SX, 40SX	469.00
6450130 (8Meg)	57SX, 90, 95, P-75	469.00
P/S2, LX40 (2Meg, 4Meg, 8Meg)		109.00, 209.00, 419.00

COMPAQ MEMORY MODULES

MODEL#	AMT. UPGRADED	CMPQ PART#	PRICE
System Pro	2Meg Module	115144-001	139.00
DeskPro 486/25	2Meg Module	115144-001	139.00
	8Meg Module	116561-001	399.00
DeskPro 386/33	2Meg Module	115144-001	139.00
DeskPro 386/25, 386/20	1Meg Module	113131-001	59.00
	4Meg Module	113132-001	199.00
DeskPro 386S	1Meg Exp Bd	113633-001	139.00
	4Meg Exp Bd	113634-001	279.00
	1Meg Module	113646-001	79.00
	4Meg Module	112534-001	209.00
DeskPro 386/20E	1Meg Exp Bd	113644-001	129.00
DeskPro 386/25E	4Meg Exp Bd	113645-001	279.00
	1Meg Module	113131-001	59.00
	4Meg Module	113132-001	199.00
DeskPro 286N, 386N, 386SX20	1Meg Module	118688-001	59.00
	2Meg Module	118689-001	109.00
	4Meg Module	118690-001	219.00
DeskPro 386/16	1Meg Kit	108071-001	119.00
	4Meg Kit	108072-001	269.00
	1-2Meg Exp Bd	108069-001	309.00
	4-8Meg Exp Bd	108070-001	549.00
DeskPro 286	512K Kit	113012-001	79.00

MEMORY UPGRADES FOR COMPAQ PORTABLES AND LAPTOPS

Portable 386	1Meg Kit	107651-001	169.00
	4Meg Exp Bd	107653-001	479.00
	4Meg Daght. Bd	107654-001	479.00
Portable III	2Meg Kit	107332-001	119.00
Compaq SLT/286	1Meg Module	110235-001	119.00
	4Meg Module	110237-001	409.00
Compaq SLT/386	1Meg Module	118303-001	129.00
	2Meg Module	118304-001	179.00
	4Meg Module	118305-001	359.00
Compaq Lte 286	1Meg Bd	117081-001	79.00
	2Meg Bd	117081-002	119.00
	4Meg Bd	117081-003	319.00
Compaq Lte 386S/20	1Meg Module	121125-001	149.00
Compaq Lte 386S/20	4Meg Module	121125-002	349.00

TOSHIBA LAPTOP MEMORY

LAPTOP MODEL #	AMT UPGRADED	TOSHIBA PART #	L.A. TRADE'S CDMPT. PRICE
T1000SE/XE/LE	1.5Meg	PC14-PA8311U	139.00
T1000SE/XE/LE	2Meg	PC14-PA8312U	169.00
T2000/T2000SX	1Meg	PC18-PA8316U	114.00
T2000/T2000SX	2Meg	PC18-PA8317U	179.00
T2000SX/T1000LE	4Meg	PC-PA8314U	309.00
T2000SX/T1000LE	8Meg	PC14-PA8315U	609.00
T2000SXE/2200SX	2Meg	PC-PA2000U	179.00
T2000SXE/2200SX	4Meg	PC-PA2001U	309.00
T2000SXE/2200SX	8Meg	PC-PA2002U	619.00
T1200XE	2Meg	PC13-PA8306	114.00
T1600	2Meg	PC8-PA8302U	114.00
T3100e	2Meg	PC9-PA8340U	114.00
T3100SX	2Meg	PC15-PA8308U	114.00
T3100SX	4Meg	PC15-PA8310U	195.00
T3200	3Meg	PC6-PA7137U	195.00
T3200SX	2Meg	PC12-PA8307U	114.00
T3200SX	4Meg	PC12-PA8909	195.00
T3200SXC	2Meg	PC19-PA8318U	129.00
T3200SXC	4Meg	PC19-PA8319U	209.00
T5100	2Meg	PC7-PA8301U	114.00
T5200/T8500	2Meg	PC10-PA8304U	114.00
T5200/T8500	8Meg	PC10-PA8313U	419.00

BRANDNAME LAPTOP MEMORY

Leading Edge 0/LT 386SX	1Meg		119.00
Bondwell B310, Plus	1Meg		119.00
NEC Prospeed 286, 386SX-16	1Meg	PC21-21	119.00
NEC Prospeed 286, 386SX-16	4Meg	PC21-22	369.00
NEC Prospeed 386	2Meg	PC31-21	159.00
NEC Prospeed 386	8Meg	PC31-22	779.00
NEC Prospeed 386SX-20	1Meg	PC43-21	139.00
NEC Prospeed 386SX-20	4Meg	PC43-22	409.00
Sharp PC-6220	1Meg	CE 621B	119.00
Sharp 6640	2Meg		109.00
TI Travelmate 2000	1Meg	2568034-0001	119.00
TI Travelmate 3000	2Meg	2566996-1	109.00
Zeos 386SX Notebook	2Meg		129.00
Zenith Master Sport 386SX	2Meg	ZA-300-1 or 386SL	179.00
Zenith Super Sport —			
286, 286E	1Meg	ZA-180-66	109.00
286E, SX	2Meg	ZA-180-64	159.00
SX Alpha	2Meg	ZA-180-86	159.00
Everex Tempo LX	2Meg	PCA 00053-00	129.00
AST Notebook Prem Exec	4Meg	500814-003, 386SX20	219.00
Sanyo 17/18 NB	2Meg	MBC-NBMEM2	129.00
Panasonic CF170, CF270	1Meg	CF-BA165	99.00
Epson NB3	1Meg, 4Meg		129.00, 299.00
Tandon	2Meg, 8Meg	NB386SX-20	139.00, 399.00
AT & T Safari	2Meg, 4Meg		189.00, 379.00
Packard Bell 386SX	1Meg, 4Meg		149.00, 349.00
Magnavox Metalis	1Meg, 4Meg		149.00, 349.00

LASER PRINTER MEMORY UPGRADES

	1MEG	2MEG	4MEG		1MEG	2MEG	4MEG
HP 2, 2D, 3, 3D, 3P, 2P	$89	$125	$195	HP III SI	$89	—	$229
Panasonic 4420/4450I	$99	$139	$229	Panasonic 4455	—	$219	—
Panasonic 4450	$135	—	—	NEC 90, 290	—	$219	—
Epson 6000, Action Lsr.	—	$149	$229	OMS 410	$129	$189	$299
Toshiba Page Laser 6	—	$149	$229	Brother HL-4	$129	$189	$299
Packard Bell P89500	—	$149	$229	Konica 3110	$199	$279	$499
OKi 400	$119	$169	—	TI XL/PS17/PS35	$69	—	
OKi 830, 840	CALL	CALL	CALL	OMS PS 815/825	CALL	CALL	CALL
IBM Laser 4019, 4019E	$89	$135	$189	Canon LBP4	$209	$259	—
IBM Laser 4029	$129	$199	$319	STA. LS04	$129	$179	$279

DeskJet 500 (256K) $89.00

H.P. COMPATIBLE FONT CARTRIDGE

IBM 4019, 4019E, FONT CARTRIDGE 209 Fonts 159.00
TURBO 25 Comparable to Pacific Data's 25 CARTRIDGES IN ONE!™, 150 Fonts 99.00
TURBOSCRIPT™ 47 scalable fonts in any point size. 229.00
TAX & FINANCE CARTRIDGE 129.00
PRO-65 for Epson & Toshiba Laser Printers, 65 Fonts 149.00

NO SURCHARGE FOR MASTERCARD, VISA OR DISCOVER. PURCHASE ORDERS ACCEPTED FROM FORTUNE 2000, GOVERNMENT & INSTITUTIONS. Price & availability subject to change. California orders add 8.25% sales tax. Returned orders or ordered wrong parts are subject to a 20% restocking fee (Memory chips not installed in boards.) We accept International orders shipped via UPS Air, APO, FPO orders welcome. All credit card charges verified for fradulant use. **SORRY, NO REFUNDS AFTER 30 DAYS — EXCHANGES ONLY.** We accept MC, VISA, Discover, AE, prepaid orders, purchase orders, wire transfer, COD (cashiers check) orders, cash & cashiers checks • ALL MANFACTURE PART #'S ARE FOR REFERENCE ONLY •

BOCA AT PLUS

16 BIT MEMORY BOARD FOR 286, 386 AT
0K-8Meg Board • 4.0 LIM Compatible • *New 5 Year Warranty*
Conventional, Expanded and Extended Memory
Supports DOS, OS/2, LIM/EMS & EEMS
USING 1 MEG X 1 DIPS — **Versatile Split Memory Addressing**
Operates with CPU Speeds to 33 MHz
Supports Desqview, Multitask operations
BRAT 90 AVAILABLE USES 1 X 9 SIMM 139.00 9" LONG
0K — $109.00 2Meg — $189.00
4Meg — $269.00 8Meg — $419.00
Board made by Boca Research, AT plus
BOCA AT PLUS I/D 1 par., 1 ser., 0-4 meg 129.00
BOCA AT I/D 44 2 ser. ports, 2 par. ports 69.00

BOCA XT 8 BIT BUS

• Expanded memory for XT • Lim 4.0 compat. 0-2Meg • Uses 256x1-150
D-K . . . $109.00 1Meg . . . . . $170.00 2Meg $229.00

MEMORY BOARDS

IBM Compatibles, Compaq & PS/2

• WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE •

All products Brand New & Guaranteed • We Buy Excess Inventory
Trademarks are registered with their respective companies.

L.A. TRADE
20930 South Normandie • Torrance, CA 90502

EVEREX

EV-3000, EV-159
0-3Meg, 4.0 Lim compatible • Uses 256x1 chips $99.00
EV-8000, EV-178
0-8Meg, 4.0 Lim compatible • Uses 1Megx1 chips • Supports multi-tasking & DMA multi-tasking in hardware $219.00

PS/2 MCA 0-8MEG EXPANSION BD.

0-8Meg Extended and/or Expanded Memory for all IBM P/S2 Models 50, 50Z, 60, 55SX, 70, 80, 90
USES 1 X 9 SIMMS BOCA BR MC-80
0K — $139.00 2Meg — $221.00
4Meg — $303.00 8Meg — $467.00

AST 6-PK. MEMORY BOARDS

AST 6-Pak Plus for PC, XT, 64K . 129.00 — with 384K 159.00

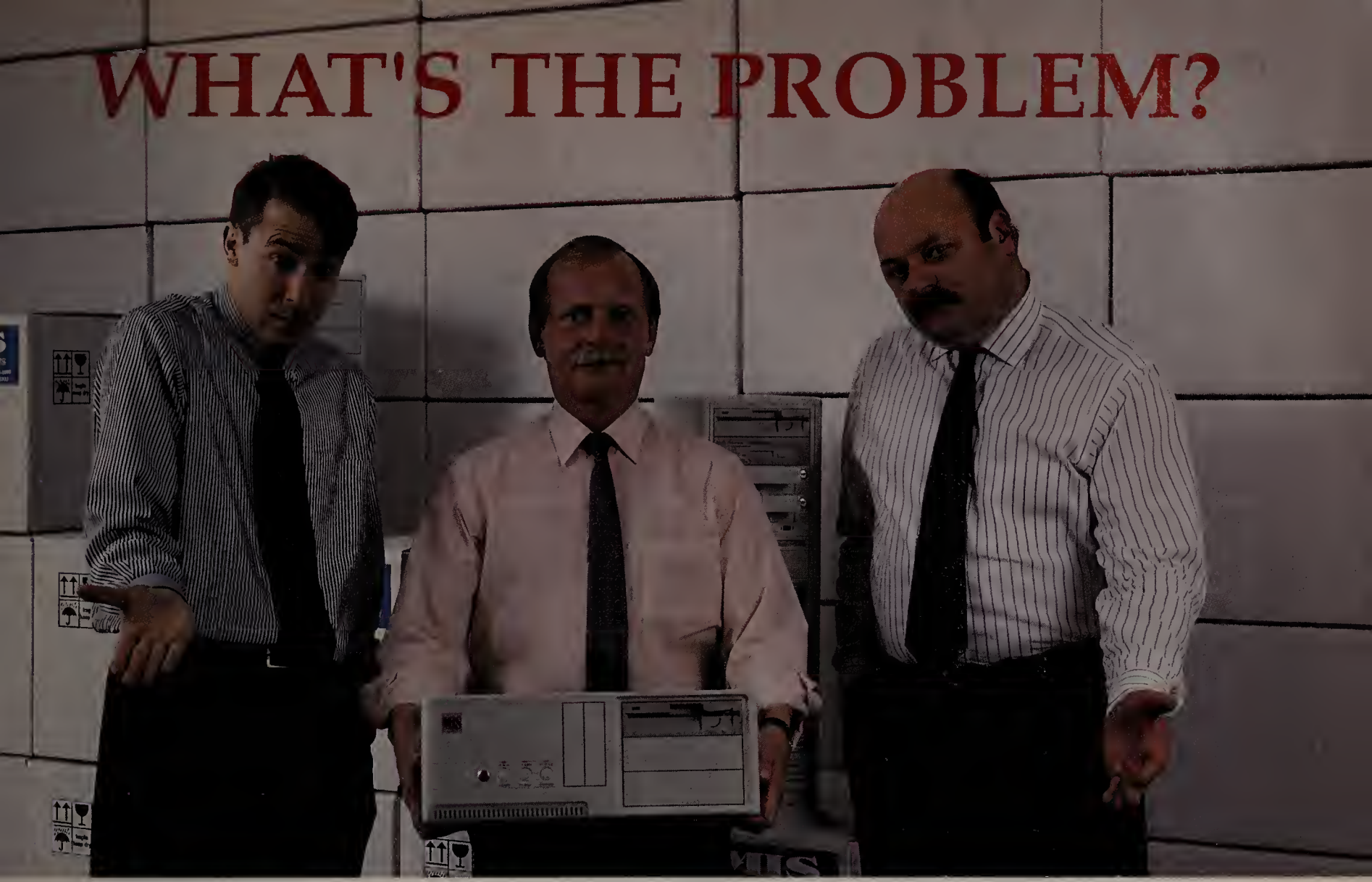
310-782-2880 *(previously area code 213)*
FAX: 310-782-0240

CALL TOLL FREE **1-800-433-3726** (US and Canada)

ESTAB. 1985

Mon-Fri, 8:00 a.m. to 5:00 p.m. PST
Sat. 10:00 a.m. to 12:00 noon

WHAT'S THE PROBLEM?



QUALITY
SHORT LEAD TIMES
EXCELLENT SERVICE
YOUR REQUIREMENTS MET
A GREAT WARRANTY • A FAIR PRICE

These are some of our Account Managers. They are why **dealers, VARs, distributors, federal agencies, educational institutions,** and **Fortune clients** are lining up to purchase our systems. Our sales people have been in the business long enough to know how important your position is, how much trouble you can get in for buying the wrong thing, what your **approval cycle** is, how tight your margins are, etc. Instead of robotically repeating "company policy", we will make every attempt to satisfy your requirements.

Our line of systems includes everything from an 80286/12 up through an **80486/50** MHz **EISA** and incorporate name brand components such as **Micronics, Intel, Maxtor,** etc. Our computers are performing **CAD/CAM, Image Processing,** and **Windows** functions as well as being hooked to **VAXes** and running **SCO, Interactive, ESIX** and **Novell**. And our technical staff is familiar with all of these capabilities which makes it really nice.

If you would like to have your **Intel based system requirements** satisfied at a considerably lower investment than your used to and speak to some one who is used to **communicating on your level, give us a call.**

MIS Computer Systems

(800) 733-9188

Come see us at
COMDEX booth #6030

MADE IN THE U.S.A.

All names mentioned are registered trademarks of their respective companies

intel inside

Circle 172 on reader service card

COMPUTER DISCOUNT WAREHOUSE™

EPSON LQ-570, LQ-1070

The high-speed Epson LQ-570 with scalable fonts, enhanced graphics and advanced paper handling, offers more performance than any printer in its class.

- 24-Pin, Impact Dot Matrix • 360 DPI
- Convertible Push/Pull Tractor for Rear • Top, Rear, Bottom and Front Paper Paths
- Includes Two Scalable Fonts, 8 to 32 Points • 12 Built-In Fonts
- Fast Print Speeds Up to 315 CPS
- Epson's Two-Year Limited Warranty

EPSON®

LQ-570 Narrow Carriage ...$254.00 CDW 19682

LQ-1070 Wide Carriage ....$349.00 CDW 20233

WHY SETTLE FOR LESS?

CDW® SERVICING YOUR COMPUTER NEEDS SINCE 1982

NEC UltraLite™ SX/20

- 80386SX 32-Bit CPU, 20 MHz • 2 MB RAM Stnd., Exp. to 10 MB • 60 MB HD • One Int. 3.5" Dual Density Floppy Drive
- Sidelit B&W LCD w/640 x480 VGA Res., 16 Gray Shades
- Built-in SCSI Port Compatible
- Power Saving Modes
- Memory and Modem Slot Internal • Interfaces: Serial, Parallel, CRT, Ext. FDD, and SCSI • Password Security
- MS-DOS, SETUP, Memory Management

CDW® Price
$2372.44
CDW 20380

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

NETWORKING PRODUCTS

NOVELL

NOVELL Netware V2.2, 5-User 5.25" $483.70
NOVELL Netware V2.2, 10 User 5.25" 1109.43
NOVELL Netware V2.2, 50 User 5.25" 1949.58
NOVELL Netware V2.2, 100 User 5.25" 3058.57
NOVELL Netware V3.11, 10 User 5.25" 1397.46
NOVELL Netware V3.11, 20 User 5.25" 1889.17
NOVELL Netware V3.11, 100 User 5.25" 3667.35
NOVELL Lite 69.00
NOVELL Lite Starter Kits 399.77
NOVELL Lite Add-On Kit 209.65
ETHERNET Interface Connector (NE1000) 129.44
ETHERNET For PS/2 (NE/2) 247.12
ETHERNET Board (NE2000) 157.06
ETHERNET Eisa (NE3200) 687.50

3Com®

3COM 3C503 TP 10 Base T $229.88
3COM 3C507 Ethernet Card 281.61
3COM 3C503 Etherlink 188.24
3COM 3C523 MCA Ethernet 269.31
3COM Ethernet Repeater 848.31

THOMAS-CONRAD

6242 Arcnet 8-Bit $85.89
6245 Arcnet 16-Bit 179.31
6245 Twisted Pair Plus Ethernet 229.07
6246 PS/2 Board Arcnet 228.16
6151-11 16 Port Smart Hub 691.01
4045 16/4 Token Ring XT/AT 499.23

SMC® ACCESSORIES

SMC 3512 TP 12 Node Concentrator $709.18
Active Hub 8 Port Coax 249.86
Active Hub 8 Port Twisted Pair 355.68

SMC INTERFACE CARDS

3008 Coax 8-Bit Ethernet $167.44
3008 TP 10 BaseT 8-Bit Ethernet 181.81
3016 TP 10 BaseT 16-Bit Ethernet 199.92
PC 600FS Coax Arcnet File Server 16-Bit 209.25
PC 650WS Coax Arcnet Workstation 16-Bit 129.88
PC 650FS TP Arcnet File Server 16-Bit 209.25
PC 600WS TP Arcnet Workstation 16-Bit 129.88
SMC PC130 8-Bit Arcnet Coax 89.50
SMC PC130E 8-Bit Arcnet Coax 119.00
SMC PC270 TP Arcnet 124.56
Eisa 3200 Arcnet Twisted Pair 736.08
SMC 8-Bit 10 Base T Ethernet Elite 182.76
SMC Ethernet Plus/A PS/2 Coax Elite 247.13
SMC 16-Bit Ethernet Plus Coax Elite 167.44
SMC 8-Bit Ethernet Plus Coax Elite 137.22
SMC Combo Ethernet TP, Coax, AUI Elite 197.57

XIRCOM

Arcnet Pocket Adaptor Coax $237.50
Arcnet Pocket Adaptor RJ45 ....239.77
Ethernet Pocket Adaptor Thin Coax 329.55
Ethernet Pocket Adaptor 10 Base T 329.55
Parallel Port Multi 69.00

ARTISOFT

ARS-190 AE1/T 10 Base T Adapor, 8-Bit $139.52
ARS-170 AE2/T Ethernet ISA Adaptor, 16-Bit 199.58
ARTISOFT NOS AI Software 54.50
E143 Ethernet Adaptor Kit 199.58
LANtastic Ethernet Starter Kit 4.0 ....448.31
LANtastic 2Mbps Starter Kit 325.50
LANtastic 10 Base T Starter Kit 589.20
LANtastic 2Mbps Adaptor 129.54

CALL FOR ADDITIONAL ARTISOFT PRODUCTS

NETWORKING SOFTWARE

IBM TOKEN RING

IBM 16/4 PS/2 MCA $638.80
IBM 16/4 XT/AT 634.50
IBM 16/4 Multi Access Unit MAU 468.53

INTEL NETWORKING

INTEL Token Express EISA 16/4 ....$648.88
INTEL Ether Express 16-Bit Coax 119.32
INTEL Ether Express 16-Bit TP 134.33
INTEL Token Express XT/AT 16/A 509.23
INTEL Ether Express EISA 579.44

BORLAND dBase IV LAN Pak $626.37
BORLAND Quattro Pro Network Node 244.30
BRIGHTWORKS PS Print 243.68
CC Mail Products ....CALL
FIFTH GENERATION Direct Access Network 344.57
HARVARD GRAPHICS LAN Pack ....CALL
LOTUS 1-2-3 2.3 Server 558.66
LOTUS 1-2-3 2.3 Network Node 339.47
LOTUS 1-2-3 3.1+ Server 629.54
LOTUS 1-2-3 3.1+ Network Node 428.16
MICRORIM Rbase V3.1 LAN 6 Users 589.00
MICROSOFT Word 5.5 Network Node 185.39
MICROSOFT Excel Network Nodes 249.11
NORTON LAMBERT PRODUCTS ....CALL
ONTRACK Disk Manager For Novell 117.45

WordPerfect CORPORATION

WORD PERFECT 5.1 5 Pack 1099.37
WORD PERFECT Office 5-User V.3.01 ....278.79
WORD PERFECT Office 20PK V.3.01 ....923.08
WORD PERFECT Draw Perfect Server 269.53
WORD PERFECT Draw Perfect Add. Station ..165.93

TAPE & FLOPPY DRIVES

IRWIN®

IRWIN 9131se, 4 Gigabyte, External $2031.03
IRWIN 9231se, External 3680.46
IRWIN A250 PC 280.89
IRWIN A120PC-120 MB Internal 225.19
IRWIN A250PC-250 MB Internal 280.89
IRWIN A120E-120 MB High Speed External 292.13
IRWIN A250E-250 MB High Speed External ..346.68

Call For Controllers, Accessory Kits and Tapes.

Mountain.

MOUNTAIN 525MB Filesafe External $2369.42
MOUNTAIN 2.2 Gigabyte Ext. Tape Drive 4398.91
MOUNTAIN 250MB External Backup 599.22
MOUNTAIN 250MB Internal Backup 474.42
MOUNTAIN 2.0 Gigabyte External Filesafe ...3519.20
MOUNTAIN 120MB Internal Tape Drive 239.80
MOUNTAIN 120MB External Tape Drive 449.90
MOUNTAIN 304MB Internal IDE Backup 539.50
MOUNTAIN 250MB ExternalFilesafe 1479.13

Call For PS/2 Drives, Controllers, Accessory Kits and Tapes

COLORADO MEMORY

COLORADO Jumbo 120 ....$189.37
COLORADO Jumbo 250 ....253.58
COLORADO OFA700 ....724.92

Call For Accessories And Interfaces

PLOTTERS, DIGITIZERS & SCANNERS

CalComp

12 x 12 w/16 But. ....CALL 2036 Pacesetter E ....CALL
12 x 18 w/16 But. ....CALL 2024 Pacesetter D ....CALL

KURTA®

12 x 12 XLP ....$288.70 12 x 17 ....$538.27

Summagraphics

Summagraphics Summa II 12 x 12 ....$279.60
Summagraphics Summa II 12 x 18 ....542.86
PANASONIC FX-RS307U 600x600 Scanner 779.41
COMPLETE PC Fulll Page Scanner 526.66
EPSON ES300C Color Scanner 986.02

HOUSTON INSTRUMENT

DMP-161 ....$2795.42 DMP-162 ....$3495.40

HEWLETT PACKARD

HP7575 DXL $3079.88
HP7475A 1236.26
HP7550B 2696.50
HP7570A 2529.36
HP7576A EXL 3967.25
HP SCANJET + ...664.45
HP SCANJET II C Color XT/AT 1449.10

CAD MONITORS & CARDS

MITSUBISHI HL6945 ATKL 19" $1798.91
MITSUBISHI HL6915ATKL 1959.77
SIGMA Laserview 19" 866.82
ATI Graphics Ultra 1MB 435.41
HERCULES Graphics Station Gold 1MB 559.22
CALCOMP 3401 ....CALL

FAX & ACCESSORIES

A-B Switching Box /AB X Box) ....$28.00 / $34.95
BROWN-WAGH Sound Blaster 112.80
BROWN-WAGH Sound Blaster Professional 189.28
CH PRODUCTS PS/2 Gamecard III 47.25
CH PRODUCTS XT/AT Gamecard III w/Y Cable 36.50
CH PRODUCTS Flight Stick 47.00
CH PRODUCTS Mach III Joystick 31.20
COMPLETE PC Communicator 299.56
COMPLETE PC Portable Fax 299.56
Electronic 4-Way Switchbox Parallel 89.50
Electronic 4 to 2 Parallel Box 109.50
INTELLICOM Long Link 117.70
KENSINGTON Masterpiece/Plus ....84.70 / 96.00
KEYTRONICS 5151 IBM or AT&T 126.70
KEYTRONICS 101+ 93.50
KINGSTON SXNow AST 286, 20MHz 299.91
KINGSTON SXNow AST 286, 25MHz 418.60
KINGSTON SXNow IBM 50/60, 20MHz 299.91
PACIFIC DATA Connect 1.25MB 332.58
PRACTICAL Par/Ser Universal Buffer 149.50
XT Power Supply 150 Watt 59.00
AT Power Supply 200 Watt 79.24

CompleteFax 9600 ....$399.50
JETFAX II 669.32
SHARP FO-334 ....687.91
SHARP FO-216/FO-240 ....516.30/639.00
PANASONIC PD4200 Plain Paper Fax 1425.30

CD-ROM & OPTICAL DRIVES

HITACHI 3600/3650 ....$456.81 / $495.68
HITACHI 1700S External 467.42
MAGNAVOX 461RS Ext., w/CD Bundle 398.70
NEC CDR 36 External Portable 388.40
NEC CDR 73M External 597.22
NEC CDR 83 Internal 539.16
PANASONIC LF5010 Worm External 2089.91
PANASONIC LF5014 Worm Internal 1895.48
PANASONIC LF7010 Ext. 1 Gb Erasable Optical ..2659.91
SONY CDU-7201 External CD-ROM 484.78
SONY CDU-535 Internal CD-ROM 354.17
SONY CDU-54101 Internal SCSI CD-ROM 418.32
SONY SMO-S501 650M6 Erasable Optical 2980.42
TOSHIBA 3301 External 646.06
TOSHIBA 3301 Internal 539.32
CD-ROM Software 5 CD's Bundle 139.62

SOFTWARE

ACT Software 2.1 ....$216.55
ALPHA FOUR 1:1 Relational Database 299.50
AUTODESK Autosketch 142.69
AUTODESK Animator 277.48
BANNER BLUE Org. Plus Advanced 62.30
BORLAND dBase IV 469.33
BORLAND Reflex 157.95
BORLAND Sidekick V 2.0 ....54.67
BORLAND Turbo C++ 64.75
BORLAND Turbo Pascal 93.60
BORLAND C++ V3.0 ....299.17
BORLAND Paradox V 3.5 ....483.52
BORLAND Quattro Comp Upgrade 89.78
BORLAND Quattro Pro 3.0 ....299.22
BRODERBUND Print Shop 36.50
CENTRAL POINT PC Tools V.7.1 ....99.43
CLARION Professional Developer 445.95
COMPUTER ASSOC. Super Project Expert 413.30
COMPUTER SUPPORT Arts & Letters 439.12
CUSTOM Freedom of the Press Postscript 241.44
DAC Easy Accounting 4.2 ....85.33
DAC Easy Bonus 4.2 ....129.31
DATAEASE File Management 524.66
FIFTH GENERATION Mace Util. 1990 ....89.80
FIFTH GENERATION Fastback 3.0 ....116.08
FIFTH GENERATION Direct Access 63.77
FORM TOOL 3.0 ....57.90
FOXBASE Foxpro 2.0 ....449.52
GEOWORKS Ensemble 119.42
GIBSON Spinwrite 2.0 V.1.1 ....61.95
HELIX Netroom 49.90
IBM Displaywrite 5.0 ....235.50
INTUIT Quicken 5.0 ....43.79
LAN Spool 286/386 ....257.10 /362.21
LOTUS 1-2-3 V2.3 ....319.95
LOTUS 1-2-3 V 3.1 Plus 385.50
LOTUS Agenda V2.0 ....275.75
LOTUS Double Up Upgrade 148.37
LOTUS for Windows 395.61
LOTUS Freelance Graphics 349.25
LOTUS Magellan 95.85
LOTUS Manuscript. 309.79
LOTUS Symphony 473.62
LOTUS Upgrades ....CALL
MICRORIM Rbase V 3.1 For DOS 449.50
MICROCOM Carbon Copy V6.0 ....109.37
MICROSOFT C Compiler 6.0 ....298.60
MICROSOFT DOS 5.0 Upgrade 59.50
MICROSOFT Flight Simulator 4.0 ....39.50
MICROSOFT Fortran Compiler 5.0 ....274.44
MICROSOFT Quick Basic Compiler 4.5 ....64.75
MICROSOFT Upgrades ....CALL
MICROSOFT Visual Basic 127.50
MICROSOFT Word V5.5 ....208.77
NANTUCKET Clipper V5.0 ....485.50
POWER UP! Calendar Creator Plus 49.80
PROCOMM Plus 63.87
QUARTERDECK Desqview 386 V.2.4 ....129.86
QUARTERDECK OEMM 386 Manager 59.90
QUARTERDECK QRam & Manifest 49.30
QUARTERDECK QRam & Manifest for PS/2 ....59.00
QUARTERDECK Desqview 72.10
QUALITAS 386 Max 5.0 ....64.19
REFERENCE Grammatik 4 V.2.0 ....55.78
SOFTLOGIC Software Carousel 53.40
SOFTWARE PUB. PFS: Write 154.30
SOFTWARE PUB. Harvard Graphics V3.0 ....367.88
STACKER SOFTWARE 82.33
SYMANTEC NORTON Advanced Utilities V6.0 ....109.90
TOBIAS Managing Your Money 114.36
TRAVELING SOFTWARE Laplink Pro 85.58
TRAVELING SOFTWARE Desklink 97.60
WORDPERFECT 5.1 5.25" or 3.5" 247.45
XEROX Ventura Software Version 3.0 ....479.20
ZSOFT PC Paintbrush IV Plus 109.86

AT CDW® YOU GET MORE COMPUTING FOR YOUR BUCK. CALL NOW!

▶ **CDW®** means Service ▶ **CDW®** means Savings ▶ **CDW®** means Business ▶ **CDW®** means Experience
▶ **CDW®** means Technology ▶ **CDW®** means Networking ▶ **CDW®** means Computing

PCW399

FREE TECHNICAL SUPPORT FOR CDW® CUSTOMERS.

(800) 359-4CDW

WE SELL NAME BRANDS FOR LESS!

©1992 MPK Computing, Inc.

ALWAYS WORKING TO KEEP YOUR COMPUTING ONE STEP AHEAD.

Circle 68 on reader service card

COMPUTER DISCOUNT WAREHOUSE™

OKIDATA

The Personal Page Printer For Smaller Budgets

OL400 LED Page Printer

Features: • 4 PPM • 300 DPI • More Standard Typefaces & Fonts Than LaserJet™ IIP • High-Capacity 200-Sheet Paper Tray Included • Slim Low-Profile Design Fits Any Desktop • HP® Series II Compatible • Industry's Best Warranty: 5 Years On Printhead, 1 Year Parts/Labor On Printer

CDW® Price $589.40 12884

WHY PAY RETAIL?

CDW® Sells For Less

AND **SERVICES** YOU BETTER

MAGNAVOX 386SX/16

Personal Computer

• 386SX CPU • 16/8 MHz Speed • 1 MB RAM Stnd., Exp. to 8 MB • Three 16-Bit Expansion Slots • 101-Key Keyboard • 1.44 MB 3.5" Floppy • 1.2 MB 5.25" Floppy • 40 MB Hard Drive • Super VGA Adapter (800 x 600), VGA, EGA, CGA • 2 Serial, 1 Parallel • Novell Workstation Approved • MS-DOS, MS-DOS Shell, GW-BASIC • LotusWorks (Integrated Software - Word Processor, Spreadsheet, Database, Graphics, Communications, Spell Checker, Thesaurus) • 1-Year Parts and Labor Warranty

CDW® Price

$729.25 20094

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

COMPUTERS

MAGNAVOX

MAGNAVOX SX16 40MB VGA Ad., 2 Dr. $729.25
MAGNAVOX SX16 40MB CD-ROM 1048.80
MAGNAVOX SX20 80MB, 2 MB, VGA, 2 Dr. 989.50
MAGNAVOX SX20 80MB, Int. CD-ROM 1329.25
MAGNAVOX 386/33 120MB HD, 2MB, VGA 1399.60
MAGNAVOX Metalis286 VGA 20MB Notebook 899.00
MAGNAVOX MetalisSX/16 VGA 40MB NB Modem.1499.20
MAGNAVOX MetalisSX/20 VGA 60MB Notebook.1797.75

PACKARD BELL

Force SX16N, 85 MB HD, 2MB, VGA, Mouse....$895.30
Force SX16N+, 107 MB HD, 2MB, Modem, Mouse.1095.25
Force 486SX, 105 MB HD, Modem, Mouse 1895.17
Force 486/33+, 210 MB HD,4MB, Modem, Mouse 2695.20

Panasonic

CF 270 286 16MHz 20MB VGA Notebook .$1548.38
CF 270 286 16MHz 60MB VGA Notebook 1897.85
CF 370 386SX 20MHz 60 MB VGA Notebook.2649.00

ALR

ALR 386/33 Model 101 .....$1599.25
ALR Power Veisa 486/33 101 .....4599.78
ALR PowerFlex 386SX Model I 829.11

CALL FOR THE LATEST MODELS FROM ALR

COMPAQ

LTE Lite 20MHz, 40MB $2495.20 Port 486C M120 ..$8641.30
LTE Lite 25MHz, 60MB ..3179.40 CPO386/25M Mdl 12527.47
DP386S20 Mdl. 1..1709.20 CPO486/33M Mdl 13909.78

NEC

ULTRALITE SX20 60MB Notebook.....$2372.44
ULTRALITE SL20 80MB Notebook 2589.26
ULTRALITE III Notebook .....NEW LOW PRICE

TEXAS INSTRUMENTS

Ti TravelMate 2000 20MB/40MB.....$926.32/1229.88
TM 3000 WIN SX, 60/80/120MB 2699.00 / 2967.00 / 3298.00
TM 3000 SX Notebook 40/60MB....1889.85 / 2295.50
TM 3000 SX Notebook 80/120MB .....2658.30 /2995.50

HP, IBM & COMPAQ MEMORY

1MB Module CPO - 386,386S, 20E/25E $97.40
2MB Memory Board CPO LTE 286 .....168.83
4MB Memory Board CPO LTE 286 .....431.25
4MB Memory Card CPO LTE 386S.....616.89
2MB Memory Board CPO SLT 386 .....195.00
4MB Memory Board CPO SLT 386 .....399.00
8MB Memory Mod CPO Deskpro/System Pro ...595.60
4MB Module CPO - 386, 386S, 20E/25E 253.24
4MB CPO Exp. Bd. - 386S, 20E/25E 299.95
1 MB AST Cupid Simms.....66.93
4 MB AST Cupid Simms.....246.25
AST Exec 386SX 4 MB Module 249.75
2MB Upgrade HP LaserJet II / IID.....165.32
1MB Upgrade HP LaserJet IIP / III.....89.40
2MB Upgrade HP LaserJet IIP / III.....165.32
4MB Upgrade HP LaserJet II / IID.....279.00
IBM Personal System II Memory .....CALL
2MB Memory Module IBM PS/2 Mod 70/50Z...142.85
1MB OKI Laser 400.....102.59

KINGSTON FOR TOSHIBA

2MB 1200XE .....$149.35 4MB 3100SX $278.52
2MB 3100SX .....149.35 2MB 3200SX 149.35
4MB 3200SX .....278.52 3MB 3200 .....273.00

2MB Memory Module TOSHIBA 5200.....149.35
8MB Memory Module TOSHIBA 5200.....599.00

WYSE TERMINALS

WYSE 50/60 Amber or Green $346.15/279.92
WYSE 160/30 Amber or Green 321.98/274.89
WYSE 185 VT320 Amber, Green or White 345.60
WYSE 150 Amber, Green or White 260.45

MATH COPROCESSORS

INTEL 387DX 16/20/25/33.....$195.25
INTEL 387SX16/SX20 .....118.00/128.50
INTEL 287XL/287XLT 78.00/78.00
CYRIX FasMath SX16/SX20.....104.42/117.47
CYRIX FasMath DX16/20/25 .....155.25
CYRIX FasMath 287 8-20 MHz.....78.00
CYRIX FasMath DX33 MHz 159.90

DOT MATRIX & LASER PRINTERS

EPSON

LX810 .....$154.00 FX850.....$289.00
LO870 .....435.00 EPL 7500 Laser PS.1899.00
LO2550.....848.00 LO1170.....584.00
FX1050.....395.00 LO570.....254.00
Action Laser II 6PPM.648.50 LO1070 .....349.00
DFX 5000 .....1268.00 DFX 8000 .....2129.00

NEC

Silentwriter II 95 ...$1384.62 P6300 New Model ...$606.06
P6200 24-pin.....399.92 P3200 24-pin.....222.11
P3300 24-pin.....322.58 P9300 .....869.21

DICONIX by KODAK

180 SI Parallel/180 SI Serial..... .....$296.28 / 307.74

OKIDATA

ML184 Turbo.....$267.89 ML390+.....$439.22
OL400.....589.40 ML391+.....596.41
OL800.....926.96 ML380 .....209.00
OL830.....1314.50 ML393+.....919.20
OL840.....1594.50 ML393 + Color.....999.50
ML320.....314.68 ML321 .....438.44

Panasonic

1124 I .....$275.95 1624.....$339.93
1123 .....199.47 1180I/1654 .....149.99/539.86
1695 .....360.21 2624 .....399.56
4450I Laser .....1019.12 4455 PostS. Laser..1749.78
4410 Laser Printer..CALL 2180/2123.....CALL

TEXAS INSTRUMENTS

TI Microlaser PS17 .....$1198.00
TI Microlaser PS35 .....1498.00

HEWLETT PACKARD

H-P LaserJet Model IIID.....$2329.22
H-P Deskjet 500/H-P Laserjet IIP Plus 398.50/829.00
H-P Laserjet III .....1529.00 H-P Laser III SI.....CALL
H-P Paintjet.....673.03
H-P Deskjet 500 Color.....699.00
H-P LaserJet IIIP 1028.00
CANON BJ10EX Bubble Jet 323.68
CITIZEN GSX 140 Plus.....289.44
OMS PS410..... .....1629.00

PACIFIC DATA 25 in 1 Cart. LAS3.....$259.00
PACIFIC DATA 25 in 1 for DeskJet 99.50
PACIFIC DATA Page Postscript 4 HP LAS3.....349.44
PACIFIC DATA Connect 1.2 MB 332.58
PACIFIC DATA 1 MB for 2P III/IID/IIIP 108.46
POSTSCRIPT CART. W/2MB HP LAS2 .....339.00
CPI JETMEMORY 1MB for HPIIP/III/IIID 98.60
CPI JETPAGE for HP IIP/IID/III Postscript.....208.72

DRIVES, TAPES & CARDS

IOMEGA B90I/B90Trans .....$767.80 / $799.50
PLUS Hardcard IIXL 105MB 437.46
PLUS Hardcard IIXL 50 MB.....298.10

Seagate

ST225 20 MB.....$180.23 SEAGATE 4097 80...$348.37
ST238 30 MB.....193.02 SEAGATE ST-2511.....228.41
ST2383E .....1178.16 ST4766E, 676 MB..1495.22
ST1480A, 426MB IDE.1298.85 ST351/AX 228.64
ST3144A, 130MB, IDE, 16MS 379.42
ST1239A 211 MB IDE.....598.52

MICROPOLIS

1684-7 340 MB $1109.86
1664-7 345MB HH.....985.44
1568-15 676MB ESDI 1358.65

CONNER

CONNER 40 MB / 120 MB.....$199.00/$368.90
CONNER 84 MB / 209 MB.....357.65/548.63
CONNER 174MB $499.50
CONNER 510MB.....1391.11

SURGE SUPPRESSORS

PROXIMA Power Touch/Plus $49.50/68.60
PROXIMA Power Director P3/P15 .....83.15/88.52
CURTIS Ruby Plus.....57.60
DATASHIELD S85/S100.....53.95/59.55
KENSINGTON MP+ 96.00
TRIPPLITE Isobar 4 Outlet/6 Outlet 44.25/47.63

MODEMS & COMMUNICATIONS

intel

2400 Internal .....$137.75 2400 External $163.94
2400B MNP.....179.98 2400 External MNP ..207.69
9600 External.....443.40 14.4 External.....509.00

PRACTICAL PERIPHERALS

2400 V.42 Int. .....$158.81 2400 Int. $79.48
2400 V.42BIS Ext...187.50 2400SA 163.63
9600 V.32/42BIS ....433.58 Pocket 2400.....98.00
9600 V.32 Int. .....372.12 2400 Ext FAX Modem134.72
2400 Int. Fax Modem.....89.50

HAYES

HAYES OPTIMA 9600 V.32. .....$349.50
ULTRA 9600 External.....609.98
HAYES OPTIMA 2400 .....147.10
HAYES Pocket Edition.....112.92
ULTRA 144, V.32 External 749.36

U.S. Robotics

Courier 2400 .....264.61 V.32 9600E 567.80
Dual 14,400 HST ...789.65 14,400 HST 557.77
V.32 BIS 96, Int. .....522.19 SPORTSTER Models.CALL

MEGAHERTZ

2400 for TOSHIBA..127.33 2400 for COMPAQ LTE $154.21
CPI VIVA 2400 Internal.....79.40
CPI VIVA 2400 External Faxsend Modem 99.40
CPI VIVA 2400 External Hardware MNP 139.73

MULTI-TECH

MULTI-TECH 2400EH 2400 Ext.....$279.43
MULTI-TECH 696EA 9600 .....448.32
MULTI-TECH MT932EAB 9600.....497.62

BOARD & COMM PRODUCTS

AST 5251-11+ Enhanced Local.....$449.75
BOCA 2 Ser/1 Par Portl.....44.67
SOUND BLASER PRO 189.28
KINGSTON SX Now, 20 MHz.....299.91
KINGSTON SX Now, 25 MHz.....418.60
EVEREX 2400 Internal Modem.....78.75
EVEREX 2400 MNP Internal.....145.34
IRMA III 3270 XT/AT/PS/2.....399.60
WORLD PORT Modem/Fax Ext. 2496 .....312.90
AST SixPack 286 0K 96.60
INTEL Above Board Plus 8 w/2 MB 397.71
INTEL Above Board Plus 512K 279.16
INTEL Inboard 386/PC 469.60
INTEL SatisFAXtion Fax Board 359.00
INTEL Snap In 386SX/20 .....359.52

BATTERY BACKUP AND UPS

AMERICAN

AME-1200VX .....$735.95 BACK UPS 800 .....$552.50
AME-Smart 400 .....307.95 AME-600LS 434.68
BACK UPS 250.....129.43 AME-Smart 900.....609.12
BACK UPS 400/450/600.....178.26/219.68/286.84

TRIPP LITE

BC-275 .....$148.41 BC-500 LAN $234.43
BC-375 .....169.26 BC-750 LAN 393.09
BC-500 .....218.61 Omni 450 LAN.....299.54
BC-1350 LAN.....668.21 BC-205.....125.89

MICE

ZNIX Super Mouse II W/Windows $79.75
LOGITECH ScanMan PC/Scanman 256....177.89/278.45
LOGITECH Trackman Serial.....78.62
MICROSOFT Mouse (Bus Version).....95.50
MICROSOFT Mouse (Serial Version).....95.50
MICROSOFT Mouse w/Windows 3.0.....144.95
MICROSOFT Ball Point Mouse.....118.90
MICROSOFT Serial, No Software 79.80
LOGITECH Fotoman 495.30
LOGITECH Mouseman Serial.....69.35
LOGITECH Mouseman PS/2 .....69.35
LOGITECH Mouseman Bus.....69.35
LOGITECH Mouseman Cordless 105.54

WINDOWS SOFTWARE

MICROSOFT Windows 3.0.....$88.00
MICROSOFT Money 43.95
MICROSOFT Office.....458.88
MICROSOFT Publisher 129.03
ADOBE TypeManager for Windows 59.07
ALDUS Pagemaker 4.0 for Windows 475.42
ATECH Windows Powerpack 48.52
BERKLEY After Dark for Windows 29.20
BORLAND Object Vision 2.0.....95.08
BORLAND Turbo C++ For Windows .....CALL
CAERE Omnipage Professional.....589.42
CALERA Wordscan + for Windows 599.42
Carbon Copy for Windows 109.37
COREL SYSTEMS Corel Draw.....365.55
CROSSTALK for Windows 119.85
DELRINA Per: Form Pro for Windows 299.84
INTUIT Quicken for Windows 44.95
LOTUS 123 For Windows 385.50
LOTUS AMI Professional for Windows 283.61
LOTUS Freelance 349.25
MICROGRAFX Designer 3.1 for Windows.....439.95
MICROGRAFX X-Port for Windows 134.42
MICROGRAFX Draw for Windows.....148.98
MICROGRAFX Charisma.....309.23
MICROSOFT C Compiler For Windows 459.12
MICROSOFT Excel for Windows 297.09
MICROSOFT Powerpoint for Windows.....297.65
MICROSOFT Project for Windows.....418.68
MICROSOFT Windows 3.0 Developers Kit 297.20
MICROSOFT Word for Windows 297.89
MICROSOFT Works for Windows.....127.62
OKNA Windows Desktop 36.48
REFERENCE Grammatik for Windows 57.12
SOFTWARE PUBLISHING Superbase 4 for Windows 399.33
SYMANTEC NORTON Desktop for Windows 95.00
SYMANTEC On Target 258.17
SYMANTEC PC Anywhere IV 96.60
WORDPERFECT For Windows.....274.18
WORDPERFECT For Windows Upgrade.....CALL
XEROX Ventura Gold for Windows.....469.25
ZSOFT Soft Type Fonts 108.86

VIDEO PRODUCTS

SAMSUNG 12" Amber 84.10
SAMSUNG 14" White.....99.88
SAMSUNG RGB Color 196.40

VGA & EGA MONITORS

MAGNAVOX Super VGA 1024 x 768 .39mm.....$259.24
MAGNAVOX Super VGA .28mm 7CM321.....329.00
MAGNAVOX CM9039 .42mm VGA Color.....229.20
MAGNAVOX 7BM749 Mono 14" VGA 119.65
MAGNAVOX 20 CM64, 20 Inch 1299.00
NEC Multisync 3FGX/4FG .....639.50 / 769.95
NEC Multisync 5D 1999.00
NEC Multisync 5FG/6FG.....1379.34 /2819.50
NEC Multisync 2A.....379.12
PACKARD BELL 8539, .42mm.....229.57
PACKARD BELL 8511, 1024, .28mm 309.95
PANASONIC C1381i, 1024 x 768, 14".....339.76
PANASONIC 20" C1991 1280 x 1024 .....1569.23
SAMSUNG 14" White VGA.....116.50
SAMSUNG CSA 7571, 17".....856.92
SONY 1320 / 1304.....429.50 / 589.60
SONY 1604S, 17", .25mm 995.42
ZENITH Z-1492 .....587.68

VGA & EGA DISPLAY CARDS

ATI VGA Wonder XL 1 MB.....$191.23
ATI Graphics Ultra 1 MB.....435.41
ATI Integra.....89.38 ATI Basic 16 VGA 67.16
ATI 8514 Ultra 1MB.....379.77
ATI Vantage 1MB.....322.15
BOCA Basic VGA.....64.50
PARADISE 1024i 256K /512K 145.63/207.36
PARADISE VGA / VGA + 16.....109.54/133.33
ORCHID Prodesigner IIS 512K 183.18
ORCHID Prodesigner IIS 1MB 233.62
ORCHID Farenheit 1280, 1MB.....329.32
VIDEO 7 1024I 512K/256K.....149.53/129.88
VIDEO 7 VRAM II VGA 1MB/512K.....319.79/256.22
VIDEO 7 VGA 16.....89.41

MOST ORDERS RECEIVED BY 5:00 P.M. C.S.T. SHIP SAME DAY

IF YOU FIND A BETTER PRICE CALL US BEFORE YOU BUY
2840 MARIA, NORTHBROOK, IL 60062 FAX (708) 291-1737

PC Magazine says..."You may find a better deal here than anywhere else."

WHY WAIT? CALL COMPUTER DISCOUNT WAREHOUSE™ NOW!

PCW399

WE SELL NAME BRAND ITEMS FOR LESS!

CDW® EXTENDED HOURS
Sales 7:30-7:30 CST Mon-Fri.
9:00-3:30 CST Sat.
Tech Support 8:00-7:00 CST Mon-Fri.

Credit Card charges are not submitted until time of shipment. Shipping and handling additional. On all hard drive orders under $200.00 please add $5.00 handling fee. Non-defective returns subject to restocking fee. All prices reflect 3% discount for cash. Allow 10 business days for shipping when paying by personal check. Software, chips and other electronic components are not returnable. All pricing subject to change. ™ - Trademarks of IBM and COMPAQ

CDW CIRCLE OF SERVICE ™

(800) 359-4CDW

In Illinois (708) 498-1426

FAX (708) 291-1737

Credit card charges are not submitted until time of shipment.

MEMBER MMC MICROCOMPUTER MARKETING COUNCIL of the Direct Marketing Association, Inc.

COMPUTER DISCOUNT WAREHOUSE™ - SERVICING YOUR PC NEED SINCE 1982 - DON'T ACCEPT ANY IMITATIONS.

Apply for the CDW® Credit Card

VISA DISCOVER MasterCard

High Volume Bids Invited

©1992 MPK Computing, Inc.

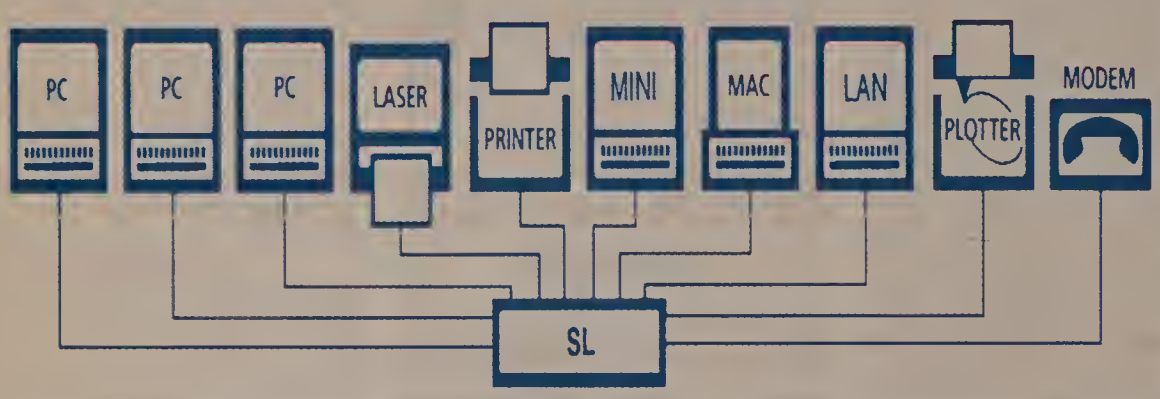
Circle 68 on reader service card

POWER to SHARE

with Printer Sharing Solutions from *Buffalo Products*

Now your work group can share expensive printing equipment. Each member of your team can have access to the maximum printing power of the whole group. Using Buffalo Products peripheral sharing devices, each PC can be connected to all of your output devices. Expensive, high-powered peripherals (like high performance laser printers and plotters) can be shared by everyone.

Advanced Features + High Quality + Low Cost = Industry Leader



Model	Ports	PCs/ Printers	Memory Available	Priced From
SL	6 Ser/4Par	Any Combination	256KB-4MB	$495
SLP	8 Par/2 Ser	Any Combination	256KB-4MB	$495
HXS	4 Serial	Any Combination	256KB-16MB	$295
HXM	2 Ser/ 2 Par	Any Combination	256KB-16MB	$295
HWP	5 Parallel	3/2, 4/1	256KB-16MB	$295
HXP	4 Parallel	2/2, 3/1	256KB-16MB	$245
HCP	2 Parallel	1/1	256KB-16MB	$225
AS31	4 Parallel	3/1	None	$175
AS41	5 Parallel	4/1	None	$195
AS81S	9 Ser/ 1 Par	8/1	None	$189

Buffalo Box Features:

- Pop-up Menu & Windows Option
- Easy Installation & Use
- Rapid Data Transfer
- User Upgradable Memory
- Reliable Automatic Switching
- No PC RAM Memory Required
- Toll-Free Application Consulting
- Toll-Free Technical Support
- 45-Day Money-Back Guarantee

BUFFALO®

US and Canada Toll-Free
(800) 345-2356

FAX (503) 585-4505
Buffalo Products, Inc.
2805 19th St. SE, Salem, OR 97302-1520

Circle 215 on reader service card

LASER PRESS LPG & GRAPHICS

Order Toll Free (USA/Canada)
(800) 628-4517

International Orders
(301) 899-1118

24-HR Worldwide FAX Orders
(301) 899-1888

The Desktop Publishing Experts

The Nation's Largest Dealer of Desktop Publishing & Multimedia Products ... Hours: M-F: 8:30 - 6pm Eastern Time, FAX ORDERS ANYTIME

Software Titles

Adobe PostScript fonts ..... prices vary - please call
Adobe Type Manager / ATM Plus Pack ..... $58 / 115
Adobe Type Align 65
Aldus FreeHand for Windows (new product) 395
Aldus Persuasion for Windows 315
Arts & Letters Graphics Editor 365
Bitstream Facelift for WordPerfect 5.0 / 5.1 49
Charisma by Micrografx 334
CorelDraw / CorelDraw on CD-RDM more clip-art .. 358 / 495
Harvard Graphics v3.0 (newest version) 395
Micrografx Designer 439
PageMaker 4.0 for Windows w/Adobe Type Manager .. 495
PowerPoint for Windows by Microsoft 295
Publisher's Prism (PostScript color separation tool) .... *CALL*
Ventura Publisher v3.0 (DDS/GEM or Windows version) 485

Multimedia & "Print-to-Video"

Authoring Software
ASK•ME 2000 (hypertext, sound, graphics) $299
IBM Storyboard Live v1.1 265
Guide from Owl International 379
Macromind Action for Windows (new product) 369

CD-ROM Disk Players & Erasable Optical Disk Drives
Hitachi **COR-1750S** external player & interface $695
NEC **COR-36** player & interface (external unit) 499
NEC **COR-73** player & interface (external unit) 669
NEC **COR-83** player & interface (internal unit) 699
NEC CD GALLERY — comes with 7 CD Disc titles, headphones, speakers, and CD-RDM player for a total bundled CD Multimedia solution pack.
CDR-36 PS/2 version CD GALLERY 639
CDR-36 PC version CD GALLERY 589
CDR-73 PS/2 version CD GALLERY 869
CDR-73 PC version CD GALLERY 848
Pinnacle Micro **PCM-102** external CD player unit 399
Pinnacle Micro **REO-130** 130-MB removable w/intf 2259
Pinnacle Micro **REO-650** 650-MB removable w/ intf .. 3559

Computer Animation & Modeling
Animator from Autodesk (WHILE SUPPLIES LAST) $95
Grasp 4.0 from Paul Mace 199
Multimedia Explorer from Autodesk 139

Computer-Digital Sound Recording & Audio Editing
Sound Blaster / Sound Blaster Pro audio card .. 144 / 249
Jovian GLORIA (CD-quality stereo digital sound) 489
ProAudio Spectrum sound board from Media Vision .. 279

NTSC Frame Grabbers / NTSC Digitizers
Computer Eyes Color Professional frame grabber $295
Computer Eyes RT (real-time frame grabber) 479
Jovian SuperVIA (16-bit color/8-bit gray realtime) 635
VIDEOLINX:Framebuffer (frame capture & display) 495
Willow Publisher's Color (16-bit color realtime) 655

NTSC Encoders / Decoders / Genlock / Overlays
Everex Vision VGA w/Overlay 1-MB $629
Jovian GENIE professional scan converter (external) 1295
Jovian VIN Plus NTSC encoder (external unit) 344
MAGNI VGA Producer VGA, Video in/out/overlay 1475
Willow VGA-TV GE/O (w/Video Titler s/w) 635

Video Titling Software -- broadcast-quality titling
Video Titler by Entropy Engineering $365
New Media Graphics - Windowed video for MS Windows !!!
Super Video Windows Board w/ software $895
Super Video Windows Tuner Board (for TV input) 295

Video Monitors & Controllers

IDEK

MF-5217 17" flat screen color 1024 x 768 non-interlaced 72-Hz refresh rate, .28-mm dot pitch $1295
MF-5221 21" flat screen color, 1280x1025, .31mm ..... *CALL*
MF-5421 21" flat screen color, 1600x1200, .26mm 2799
Please call for other IDEK monitors not listed here

MONITERM

VIKING two-page hi-res DTP monitor systems
Viking 3/91M 20" monitor & controller $1399
Viking 3/91GS 20" 4/8-bit grayscale monitor & contr 1999
Viking 3/2400M 24" monitor & controller 1999

NEC

Flat screen high resolution color monitors for DTP, scientific/engineering and CAD. Workstation monitor quality. 1280 x 1024 resolution and AccuColor on 4FG, 5FG and 6FG models.
3FGX flat screen 14", 1024 x 768 non-interlaced $649
4FG flat screen 15", 70-Hz non-interlaced, AccuColor 799
5FG flat screen 17", 70Hz non-interlaced, AccuColor 1429
6FG flat screen 21" 70Hz non-interlaced, AccuColor 2999
OCLI Filter add-on for FG-series monitors ..... *CALL*

radius

The Radius Full Page Pivot lets you choose either landscape or tabloid viewing on your PC or Microchannel computer system by rotating the monitor. The Pivot system features 1024x768 resolution, anti-glare screen, low radiation emission, 32,768 colors, & drivers for Windows, AutoCAD, Studio 3D, & more. 7-year warranty on interface.
Radius Full Page Pivot Display (Monitor only) $1149
SVGA MultiView Interface card (ISA bus version) 399
SVGA MultiView Interface card (Microchannel bus) *CALL*

High Performance Video Cards

ATI GRAPHICS VANTAGE 1-MB (11x faster than SVGA) $395
ATI GRAPHICS ULTRA 1-MB (24x faster than SVGA) 595
ATI 8514 ULTRA 1-MB (24x faster than SVGA) 695
Number Nine #9GXi 24-bit 1280 x 1024 w/TIGA 34020 .... *CALL*
Orchid Fahenheit 1280 graphics accelerator video board with Windows accelerator speeds Windows applications an average of 12 times faster than standard super VGA cards. On-board graphics processor, 1-MB RAM, 1280 x 1024 maximum resolution, 72-Hz refresh rate 395

LASER PRINTERS, UPGRADES, SCANNERS, VIDEO — OUR SPECIALTY

QMS®

NEW HIGH RESOLUTION POSTSCRIPT LASERS FROM QMS

At 600 x 600 dpi, everything on your page looks incredibly bette: images are remarkably clear and detailed, thin lines and rounded character edges are much sharper.

PS-815 MR 600 x 600 dpi laser $4295
PS-825 MR 600 x 600 dpi laser 4895

ColorScript 100 model 10 (8½" x 11") $5995
ColorScript 100 model 30*i* (11" x 17") 8595
ColorScript consumables ..... *CALL*
QMS PS-410, 45 fonts, PostScript, ATM 1695

BEST OF 1990 — PC Magazine
1990 Eddy Award — MacUser

TEXAS INSTRUMENTS microLaser

PC WORLD BEST BUY

New & upgraded printer line from Texas Instruments...

New microLaser Turbo models incorporate **Adobe® PostScript Level 2 POL** and a Weitek 8220 RISC-based 16-MHz co-processor for high speed "first-page-out" printing. Features 35 Adobe Postscript fonts, automatic emulation switching (between PostScript & PCL), automatic port selection, 2.5-MB RAM (upgradable to 10.5-MB), straight-through paper path. Optional SCSI hard disk. The upgraded "Plus" models are faster & can upgraded to TURBO models. Great price/performance and outstanding print quality.

microLaser Plus Basic HP LJ emulation, 300-dpi, 9-ppm $895
microLaser Plus PS-17 PostScript, 17 fonts, 9-ppm 1198
microLaser Plus PS-35 PostScript, 35 fonts, 9-ppm 1498
microLaser XL PS-17 PostScript, 17 fonts, 16-ppm 2395
microLaser XL PS-35 PostScript, 35 fonts, 16-ppm 2659
microLaser Turbo PS-35 PostScript 2, 35 fonts, 9-ppm 2059
microLaser XL Turbo PS-35 PostScript 2, 35 fonts, 16-ppm 3359

Upgrade any laser printer with additional memory, at time of purchase & SAVE on bundled combo

NEC -- PC Mag Editor's Choice PS Laser Printer
SilentWriter2 Mod 90 300-dpi, 2-MB RAM PostScript $1495
SilentWriter2 Mod 90 300-dpi, 4-MB RAM, PostScript 1695

NewGen — High Resolution PostScript Printers
Turbo PS/400p 400 x 400 dpi, 4-MB RAM $2275
Turbo PS/630 600 x 300 dpi ..... *CALL*
Turbo PS/840 800 x 400 dpi, w/ ART ..... *CALL*
Turbo PS/840E 800 x 400 dpi, w/ ART & IET ..... *CALL*

OKIDATA — 5-yr warranty on LED printhead
OL400 300-dpi, HP PCL emulation $635
OL830 300-dpi, PostScript & scalable HP PCL fonts 1399
OL840 PostScript, 35 fonts, 2-MB RAM 1799

Laser Printer Upgrades

Adobe PostScript Cartridge HP LJ II $329
Complete Font Library cart. for HP LJ III & IIID 258
PacificPage PE PostScript Cartridge 395
PacificPage XL *accelerated* Postscript cartridge 799
Type City by Bitstream for HP LaserJet 258
25 Plus/Charisma font cartr. for HP LJ by Elite 249
25-in-One font cartridge 269
HP LaserJet 1-MB RAM upgrade, 5-yr warranty 95
HP LaserJet 2-MB RAM upgrade, 5-yr warranty 145
HP LaserJet 4-MB RAM upgrade, 5-yr warranty 239
QMS printer RAM upgrades, 5-yr warranty ..... *CALL*
TI microLaser 1-MB RAM upgrade, 5-yr warranty 95
EP-L Toner Cartridge for HP, QMS, Canon, etc 75
EP-S Toner Cartridge for HP, QMS, Canon, etc 85
High Res Toner for NewGen, LaserMaster, etc. 159
High Density Toner for NewGen, LaserMaster, etc. .. 159

WACOM Drawing Tablets

Wacom drawing tablets are a top choice for artists. Wacom tablets respond to the pressure as well as movement of the cordless pen. The harder you press, the thicker the line becomes. Or use the pen to control color, density or whatever else the software can be set to do. Draw faster with CorelDraw, IMAGE-IN CDLDR & other programs. Windows 3.0 compatible.

Wacom 5" x 9" drawing surface and pen ..... $[illegible]
Wacom 12" x 12" drawing surface and pen 699

Color Printers

NEC
ColorMate model 40 / mod 80 upgrade kit .. $4495 / 1699

QMS
ColorScript 100 Model 10 8½" x 11" PostScript $5995
ColorScript 100 Model 30i 11" x 17" PostScript 8595

SEIKO INSTRUMENTS
ColorPoint CH5504 A-size near-bleed-to-edge $5259
ColorPoint PSX 4 (ultra-fast, 10-MB RAM) 7199

Seiko Personal ColorPoint — prints full color on plain paper, 6-MB RAM, Pantone output, PostScript, 39 fonts, 2-sided color printing and many more features!

Personal ColorPoint $4695

Scanning Software & OCR

OCR (Optical Character Recognition)
Calera WordScan - While supplies last $269
Calera WordScan Plus - PC Mag Editor's Choice 665
Catchword DCR for Logitech hand scanners 145
OmniPage 386 Professional by Caere (trainable) 639
ReadRight for Windows / ReadRight v2.01-DDS .. 295 / 299

Scanner Software for Image Manipulation & Editing
Gray F/X by Xerox-Datacopy (DDS application) $295
Halo Desktop Imager by Media Cybernetics 39
IMAGE-IN COLOR (works with WACOM tablets) 695
PhotoStyler by Aldus v1.1 519
Picture Publisher Plus by Astral/Micrografx 469
Publisher's Paintbrush for Windows by Z-Soft 285
Tempra Pro by Mathematica (DOS application 24-bit) 345
WinRix for Windows (color image editor) 295

Color & Grayscale Scanner Systems

Logitech ScanMan 32 scans up to 400-dpi and 32 gray levels. Bundled with software $158
Logitech Scanman 32 w/ Catchword DCR s/w bundle 229
Logitech Scanman 256 400 dpi, 256 grays, Windows 3.0 285
Logitech Scanman 256 bundled w/ Catchword DCR 429

Microtek ScanMaker 600Z 600-dpi, 24-bit color, 256 gray, flatbed legal size. Bundled w/ PhotoStyler & I/F 1335
Microtek ScanMaker 600G 600-dpi, 256 grayscale, Bundled with PhotoStyler & I/F 1995
Microtek ScanMaker 1850 35-mm photo slide scanner. Scans color and B&W 35-mm slides and negatives. Bundled with PhotoStyler & I/F. 1850-dpi resolution 2095

Niscan GS for Windows hand-held, 256 gray levels. Bundled w/ Image In Scan, Paint and Plus for Windows 229
Niscan GS with OCR hand-held, 256 gray levels. Bundled w/ Image In Scan, Paint and Plus (Windows 3.0 software) and Perceive Personal OCR software 335
Niscan Spectra color hand-held scanner, 24-bit, 16.7 million colors w/software 599

The Typist + Graphics hand-held OCR scanner. Easy and effective way to input text right into your favorite word processor. Just scan the document & you're ready to go. 385

LaserPix 3.0™ from XLI

2400 dpi Printer Upgrade System for HP and Canon Laser Printers

LaserPix 3.0 prints superior images from the HP LaserJet II, III™, and Canon LBP-8III laser printers. LaserPix 3.0 is a PC-AT compatible printer controller board with both Windows 3.0 PostScript and PCL drivers, with an effective resolution of 2,400 dpi with 256 levels of gray. Applications include DTP, technical documentation, scientific imaging, security, and real estate. You won't believe how great photo's, text and graphics can look coming off your printer and the speed at which they print (about 3 seconds)!

List Price: $1495 **LPG Price: $*CALL***

Roland DIGITAL GROUP

SketchMate A-size plotter $485
SketchMate A-size plotter / vinyl sign cutter 629
SketchMate B-size plotter / vinyl sign cutter (new) *CALL*
CAMM 1/20 20" wide vinyl sign cutter 3299
CAMM 1/48 48" wide vinyl sign cutter 7999
OXY-1100 8-pen A-B-size flatbed plotter 769
DXY-1200 8-pen A-B-size flatbed plotter 995
DXY-1300 8-pen A-B-size flatbed plotter 1359
DPX-2500 8-pen/pencil, 1-MB, A-C size 3395
DPX-3500 8-pen/pencil, 1-MB, A-D size 4095

TRUEPOINT

THE INTELLIGENT PRINTER CONTROLLER

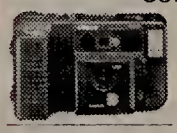
TruePoint from DP-TEK turns a Canon LBP-4 or HP LaserJet Series II or III into a true 600 x 600 dpi PostScript-compatible laser!!! Halftones, line-art and type look near-photo-typeset. Simple to install. Fully compatible with all PostScript and EPS software. Adobe type 1 compatible. Comes with 35 fonts, 4-MB RAM, PostScript interpreter in hardware, cable, manuals & 1-yr warranty.

It's HOT!

TruePoint List Price $1695, your price ..... *CALL*
TruePoint bundled with Canon LBP-4 Plus Laser $2235
TruePoint bundled with HP LaserJet III Laser 2985

ELECTRONIC PHOTOGRAPHY

Canon Professional Still Video Computer Imaging System



The Professional SV Computer Imaging System is a complete package solution for capturing and imputting high-quality still video images on an IBM-PC and compatible computers. Comes with Canon's RC-470 frame-mode camera, FV-540 frame digitizer & disk drive, software, and accessory kit. Ideal for DTP, real estate, studio & outdoor photo.

Professional SV Computer Imaging System $3795

Canon XAPSHOT Still Video Computer Imaging Kit

The Canon XAPSHOT (pronounced "Zapshot") is as simple to use as a 35-mm auto-focus, auto-exposure camera. Yields great image quality for use in your computer (with the use of a digitizer). Takes 50 shots per disk.

XAPSHOT Color Imaging Kit $769
XAPSHOT Camera with accessory kit 485
XAPSHOT Lens attachments, disks, batteries ..... *CALL*

Hercules Graphics Station GOLD Series

The **Hercules Graphics Station GOLD Series** video card takes the wait out of Windows, CAD and other graphics-intensive applications. The secret is the on-board Texas Instruments 34010 graphics co-processor operating at 60-MHz. It frees the CPU from the drudgery of graphics processing so you won't have to wait for your screen to catch up to you. Displays true color for photo-realistic images in 16 or 24-bit modes (32,768 or 16.7 million colors) Comes *accelerated* drivers for Windows 3.0, AutoCAD, 3D Studio, Autodesk Animator Pro, AutoShade and more.

Graphics Station GOLD16 16-bit color, 1-MB $419
Graphics Station GOLD16+2 16-bit color, 3-MB 499
Graphics Station GOLD24 24-bit color, 1-MB 499
Graphics Station GOLD24+2 24-bit color, 3-MB 599

2-MB VRAM Upgrade for 1-MB Graphics Station 199

ORDERING INFORMATION

Orders (U.S.A. & Canada) **(800) 628-4517**
Orders (International) ..... **(301) 899-1118**
FAX Orders (24-hr) ..... **(301) 899-1888**
Customer Service ..... **(301) 899-1118**

We Ship Worldwide

- Purchase orders welcome. Call for approval.
- COD's with cashier's or bank check, $1000 max
- No credit card or other surcharges
- Your credit card is not charged until we ship.
- For your protection, we check for stolen credit cards

FEDERAL EXPRESS

Mailing address: **Laser Press & Graphics, 4888 Stamp Road, Marlow Heights, MO 20748 Make checks payable to: Laser Press & Graphics.** ***Returns require authorization. Call for RMA.*** We do not guarantee compatibility. Non-defective returns subject to a 15% restocking fee. Returns must be in resellable condition. Software is not returnable if opened due to copyright laws. We reserve the right to limit quantities. Prices subject to change without notice.

PCW492

DESKTOP PUBLISHING // MULTIMEDIA // CAD DESIGN & DRAFTING // COMPUTER GRAPHICS // MODELING & ANIMATION

Circle 123 on reader service card

CAD ONE

Custom Built Computers .....

386/486 Mini-Tower

386/486 Standard Tower

386/486 Full Tower

Computers built to your specifications at competitive prices !

WE FEATURE PRODUCTS MANUFACTURED BY:

IBM/Lexmark - Hewlett Packard - Panasonic - Star Micronics - MicroVitec - CTX - Teac Seagate - Western Digital - Maxtor - Mitsubishi - Toshiba - QVS Cables & Accessories - AOC Gateway - 3COM - Boca Research - Digital Vision - Bondwell - Navstar - Irwin Magnetics BASF - Artisoft - CNET - Micro Solutions - Media Vision - Liteon - Chicony - and many more.

MOTHERBOARDS

486-50 MHz ..... Call
486-33 MHz 256k Cache ..... Call
486-25 MHz 128k Cache ..... Call
386-40 MHz 64k Cache ..... Call
386-33 MHz 256k Cache ..... Call
386-33 MHz 64k Cache ..... Call
386SX-25 MHz Cache Opt..... 249
386SX-16 Mhz 215
286-16 MHz 125

VIDEO

OAK S-VGA 1024x768 512k ... $89
OAK VGA 800x600 256k 69
OAK VGA 640x480 256k 59
TRIDENT S-VGA 512k 98
TRIDENT S-VGA 1MB 139

COMMUNICATIONS

Internal 2400 Baud Modem with MNP level 5 and software $129
External 2400 Baud Modem with MNP level 5 and software 165
Internal 9600 Baud Modem with V.42 BIS and MNP 5 415
External 9600 Baud Modem with V.42 BIS and MNP 5 479
CARDINAL TX/RX Fax Modem with MNP 5 149
ADTEC TX/RX Fax Modem.. 135
ADTEC TX/RX Fax Modem with voice/fax auto detect 189

I/O CONTROLLERS

Super I/O (IDE HDD, FDD, 2S/1P/1G Port ..... $ 29
IDE HDD/FDD..... 18
Adaptec 1522 KIT 187
Adaptec 1542 KIT Bussmaster 290
Adaptech ESDI Controller 165
MFM-AT Controller..... 76
MFM-XT Controller (8 bit) 57

MONITORS

KFC

Super VGA .28 DP.....$324.00
Super VGA .39DP.....276.00
Super VGA .28 DP..... 372.00
.Non-interlaced
Mutisync .28 DP.....384.00
Mono VGA 9".....144.00

IDENTITY

Super VGA .28DP $335
Super VGA .41DP 275
VGA .31DP 295
VGA .41DP 249

AOC

Super VGA .28DP $348
VGA .31 294
VGA Mono 14" 135

SAMTRON

Super VGA .28DP..... $348
Super VGA .31DP 324

MICROVITEC

17" .28DP Multi-sync $1895
20" Autoscan 1695

NETWORK SUPPLIES

3Com Ether Link II 3C503 ..... Call
3Com EtherLink Plus 3C505 Call
3Com EtherLink 16 3C507 ..... Call
ARCNet 8 port active hub $173
Star 8 bit ARCNet Card 62
Star 16 bit ARCNet Card 108
16 bit Ethernet Card 156
8 bit Ethernet Card 138

WE SELL A COMPLETE LINE OF NETWORKING PRODUCTS & SUPPLIES FOR PRODUCT AND PRICING PLEASE CALL 1-800-524-1005

DATA TRANSFER

ELECTRONIC

4 Position Par. Smart Switch $132
8 Position Par. Smart Switch ... 180
Parallel 2 to 1 Auto Switch 53
Parallel 2 to 2 w/Hot Key 65

MANUAL

AB Switch Box 19
ABC Switch Box 27
ABCD Switch Box 34
ABCDE Switch Box 45

PRINT BUFFERS

64k Parallel Print Buffer 145
256k Parallel Print Buffer 249

KEYBOARDS

LITEON 101 Soft Click $59
LITEON 101 Tactile Click 59
Chicony 101 w/Trackball 99

STORAGE DEVICES

SEAGATE
MAXTOR
WESTERN DIGITAL
(Call for product & price)

FLOPPY DRIVES

TEAC 1.2MB $69
TEAC 1.44MB 69

TAPE BACKUP

IRWIN Accutrak 120MB..... 210
IRWIN Accutrak 250MB 269

MISC. PRODUCTS

SOUND/MUSIC

MediaVision Thunder Board ..$154
ProAudio Spectrum 355

DIGITAL VISION

Computer Eyes Pro 349

PRINTERS

IBM/LEXMARK ..... Call
PANASONIC ..... Call
STAR MICRONICS ..... Call

CAD ONE offers a complete line of cables & accessories, plotters, memory, math co-processors, plotters, power backups and much more. PLEASE call for current prices and products

CAD ONE
COMPUTER DESIGN, Inc.
270 Communication Way # 4D
Hyannis, MA 02601
Phone (508) 778-1895
Fax (508) 778-1887

WE SAY YES TO YOUR CHECK

VISA MasterCard

CAD ONE takes pride in its support and customer relationships. If you can not find what you are looking for, please call our toll free telephone number.
Prices and availability subject to change without notice

Please call 800-524-1005

Business hours: Monday - Friday 9 A.M. to 8 P.M. Saturday 9 A.M. to 5 P.M. Eastern Standard Time

Circle 64 on reader service card

Eltech® is the best buy system
Now you make the winning move!

Eltech Research Inc., original manufacturer of computer systems including 386SX, 386DX, 486SX and DX, is selling direct to the public. No middleman, No markup. Just plenty of service and savings. Check what you can get if you order right now:

FREE PFS:™ WINDOW WORKS™ & SERIAL MOUSE (Microsoft Compatible)

All systems include:
2MB RAM, Cache RAM, 1.2MB floppy drive, high speed hard drive, 2 serial & 1 parallel ports, SVGA card with 512K, baby desktop case, 101 keyboard, 14" SVGA monitor 1024 x 768 0.41mm. MS-DOS™ 5.0, MS-Window™ 3.0 software. Build-in socket for Intel® math coprocessor upgrades except 486DX systems.

PC WORLD BEST BUY

Novell Labs Tested & Approved

- 7th year in business of manufacturing computers to the most demanding specifications: Yours!
- 1 year parts and labor depot warranty, with "6 MONTHS ON-SITE SERVICE" (Expandable up to 3 years)
- 100% Q.C. and burn in, Window 3.0 and DOS 5.0 installed, no risk, 30 days money back guarantee
- Gold authorized Novell Reseller, ask our Certified Engineers for your network requirements
- Life time toll free technical support
- Factory direct savings. All systems made in USA, by Eltech Research Inc.
- Convenient phone ordering. No pressure from sales people
- Systems can be upgraded with hard drive, monitor and add-on's you want and you need. Technical engineers can give you honest advice on what you will need, no matter what your applications are.

intel inside™

Model 9870
386-25 64K cache
80MB SVGA System
PC WORLD BEST BUY October 1991
~~$1899~~ **$1399**

Model 2200
386SX-20 64K cache
80MB SVGA System
PC WORLD BEST BUY January 1992
~~$1599~~ **$1299**

Model 4200
486SX-25 8K cache
80MB SVGA System
PC WORLD BEST BUY March 1992
~~$2099~~ **$1599**

Model 4330
486-33 128K cache
120MB SVGA System
~~$2499~~ **$1949**

Call to order yours today!

1-800-358-8330

FAX: 510-438-0663

Government Purchase Welcome
GSA Contract No: GS00K9AGS5086

VISA MasterCard

ELTECH RESEARCH INC.
47266 Benicia St, Fremont, CA 94538

The Intel Inside Logo is a trademark of Intel Corporation. All other trademarks are registered to their respective companies. Sales tax, shipping & handling are extra., Eltech Ad 2/92 V.2

Circle 72 on reader service card

NO SURCHARGE ON MASTERCARD OR VISA!!

K E N O S H A

We Export!

EPSON PRINTERS

LX 810	$155	LQ860	$549
FX 850	$289	LQ870	$435
FX 1050	$395	LQ1070	$349
LQ 200	$219	LQ1170	$575
LQ 570	$255	LQ2550	$849

EPL8000 – Laser Printer $1329
EPL7500 – Postscript Printer $1899
Action Laser $679
DFX 5000 – 533 cps, 160 niq $1269
DFX 8000 – 1066 cps, 160 niq $2139

KENOSHA COMPUTER CENTER

SALES LINE OUTSIDE WISCONSIN

1-800-255-2989

Shipping, customer service & technical assistance call

414-697-9595 ▪ FAX 414-697-0620

VISA, MASTERCARD, AMERICAN EXPRESS ACCEPTED

NOTEBOOKS

AST Premium Exec 386-SX25 ..... Call
AST Premium Exec 386-63V ..... Call
Everex Tempo LX 386-40 ..... Call
Everex Tempo LX 386-60 ..... Call
Everex Tempo Carrier ..... Call
T.I. TM 2000-40 ..... $1199
T.I. TM 3000-40 ..... $1899
T.I. TM 3000-60 ..... $2249
T.I. TM 3000-WINSX $2559

OKIDATA

ML320/ML321 ..... $315/$439
ML380/ML390 ..... $219/$439
ML391/ML393 ..... $599/$919
OLC 400 Laser with toner $619
OLC 800 Laser with toner $929
OLC 820 Laser with toner $1239
Okilaser 400 2mg. upgrade $149

CANON

BJ-10EX $319
BJ-300/BJ330 ..... $449/$599

CITIZEN

GSX 140+/GSX200 ..... $299/$159
GSX 145/HSP500 ..... $379/$299

FOR ALL YOUR LASER PRINTER NEEDS

HEWLETT-PACKARD

LaserJet IIIP w/toner $1059
LaserJet IIP+ w/toner $839

25-in-1 Font $249
172 fonts and symbol sets

Pacific Page $329
PostScript® language emulation in a cartridge

Complete Font Library $259
51 scaleable fonts for LaserJet III

Plotter in a Cartridge $229
Plotter emulation for the LaserJet Series II™

Jet Page - PostScript® $215

LaserJet III w/toner $1545
Deskjet 500/500C ..... $409/$729

1 MB Upgrade $89
2 MB Upgrade $119
4 MB Upgrade $199

Pacific Type $259
40 additional scaleable fonts for LaserJet III

Pacific Page XL $699
Includes Intel's 960 Micro-processor and 2 MG Memory. Up to 8 times faster than competing products.

KCC COMPUTERS

- All systems include 1 year on-side service.
- All KCC systems come with a 30 day money-back guarantee.
- Toll-free technical support for all KCC systems
- One Year Limited Warranty.

KCC 386 SX/25 w/1.2 MG Floppy, 1 MG, 40 MG Hard Drive, with DOS $849
KCC 386-25 2 MG RAM, 1.2 MG Floppy, 40 MG Hard Drive, with DOS $1099
KCC 386-33 with with 64K Cache, 1.2 MG Floppy, 4 MG RAM, 89 MG Hard Drive, with DOS $1399
KCC 486-33 with 256K Cache, 1.2 MG Floppy, 4 MG RAM, 211 MG Hard Drive, with DOS $2099

We will custom configure all KCC Computers with the name brand peripherals of your choice. Call for a quote!!

PANASONIC

1123/1124i ..... $199/$275
1180/1191 ..... $149/$219
1624/1654 ..... $339/$519
2624 ..... $379
4410/4450I ..... $649/$1079
4455 Postscript Laser $1719
2mg. Upgrade for 4420 & 4450I $149
C1381 1024 x 768 VGA Monitor $329
C1395 1024 x 768 Non-Interlaced $439
CF370 Notebook ..... Call
CF270 Notebook ..... Call

HARD DRIVES & TAPES
SEAGATE & CONNER

40MB 157A $169
89MB 3096 ..... $279
106MB 3120A $369
120MB 3144A $379
211MB 1239 ..... $569
Conner 40MB $199
Conner 120MB $359
Conner 200MB $589

IOMEGA

90 MG Int. w/Boot Card $979
90 MG Ext. w/Boot Card $999

SOFTWARE

Aldus Pagemaker $489
D Base IV $469
Harvard Graphics 3.0 ..... $389
Lotus 123 2.2/3.1 ..... $329/$389
Microsoft Mouse $89
Microsoft Excel $299
Microsoft Windows 3.0 ..... $79
Microsoft DOS 5.0 ..... $79
Multimate Version IV $239
R Base for DOS $439
Symphony $459
Word Perfect 5.1 ..... $249

intel

Intel Snap-In 386 ..... $359
80287-XL $89
80387-16 DX/SX ..... $195/$129
80387-20 DX/SX ..... $195/$135
80387-25MHz or 33 MHz $195
The Intel Plus-8 w/2MB $389
Intel 9600 Ext. Modem $439
Intel 14.4 Ext. Modem $479
Satisfaxtion (Fax Modem) $359

LASER PRINTER UPGRADES

2 MB EPSON Action Laser II $139
EPSON EPL 6 & 7000 Series ..... CALL
Oki 400 2 MB $149
2 MB Oki 830, 840 ..... $209
2 MB Panasonic 4420, 4450i $149
1 MB Panasonic 4450 ..... $159
4 MB H-P III si $219
All Other Models ..... CALL

LAPTOP MEMORY

4 MB AST Premium Exec $209
2 MB Everex Tempo LX $179
1 MB Ti 2000 ..... $125
2 MB Ti 3000 ..... $125
2 MB Toshiba 1600 ..... $119
2 MB Toshiba 1000 SE $179
2 MB For CT270 ..... $249
All other models ..... CALL

HOUSTON INSTRUMENTS PLOTTERS & SUMMAGRAPHICS DIGITIZERS

Image Maker A&B 11x17 ..... $699
DMP-52 C&D 1 Pen $1999
DMP-161 A to D 8 Pen $2799
DMP-62 A to E 8 Pen $3599
DMP-162R A to E 8 Pen Roll Feed $4779
Summasketch II 12x12 ..... $295
Summasketch II 12x18 ..... $539

HARD CARDS

Plus Hard card 50XL $299
Plus Hard card 105 MG $449
Storquest 20/40/80 MG ..... $209/$279/$379

TAPE BACK UP

Colorado Jumbo 120 ..... $209
Colorado Jumbo 250 ..... $269
Mountain, Maynard, others ..... CALL

MONITORS

Mitsubishi EGA $269
Mitsubishi Diamondscan $489
Mitsubishi HL 6605 16" $1049
Mitsubishi HL 6945 20" $1789
NEC Multisync III FGX $639
NEC Multisync IV FGX $749
NEC Multisync VFGX $1349
NEC Multisync VD $1999
Panasonic C1381 1024x768 ..... $329
Panasonic C1395 1024x768 ..... $439
Panasonic 1991 1280x1024 ..... $1559

NETWORKING

Netware 2.2 5 User $499
Netware 2.2 10 User $1099
Netware 2.2 50 User $1999
NE1000 ..... $139
NE2000 ..... $159

LANTASTIC

2MB Starter Kit/Adapter ..... $349/$145
10MB Ethernet Starter Kit $469
Adapter $209
Accessories ..... Call

GRAPHICS CARDS

ATI Wonder XL w/mouse $179
ATI 8514 1MB $419
ATI Graphics Ultra 1MB $499
Nec Graphics Engine $849
Orchid Pro Designer IIS 1 MB $279
Orchid Fahenheit 1280 ..... $299
Boca Super V6A $129
Trident SVGA 1MB $119
Mono/EGA ..... $39/$89

MEMORY UPGRADES
IBM UPGRADES

2MB 30-286 ..... $119
2-8MB BD 50-80 ..... $329
Kingston Now 386SX Processor upgrades for XT & AT ..... Call
All other models ..... Call

CHIPS & COMPATIBLE MEMORY

1MB & 4 MB Simms ..... Call
Drams & Sipps ..... Call
2MB Bd for 286 & 386 Compat $189
COMPAQ 386 1MB/4MB Mod ..... $100/$249
COMPAQ 386 1MB/4MB Bd ..... $139/$289
INTEL AB & W/512 ..... $289
BOCA Ram AT w/2MB $195
BOCA Ram AT & I/O $139
AST 6 pak plus for pc/xt w/256 ..... $149
AST System Memory ..... Call
All other models ..... Call

MODEMS

Dove Fax Modem $179
Everex 2400 int/ext ..... $79/$155
Hayes V Series int $499
Hayes Ultra 9600/ultra 144 ..... $599/$759
Intel 2400 ext $159
Intel 2400 w/MNP $209
Intel 9600 ext 14.4 ext ..... $439/$479
Intel 9600 ext 14.4 ext $479
US Robotics 14.4 int/ext ..... $549/$569
US Robotics V-32 int/ext ..... $549/$569
US Robotics Dual Std. $779

No charge for MasterCard or Visa; American Express add 5%. We will ship COD on a cash or casher's check basis only. Shipping & handling 3% – $6 minimum; AK and HI slightly higher. 15% restocking charge on returned items. Purchase orders accepted from Fortune 1000, Government institutions, schools and universities. 2% shipping discount available on orders over $2000 if prepaid by check.

Prices and availability subject to change.

KENOSHA COMPUTER CENTER
2133 91st Street
Kenosha, Wisconsin 53140

C O M P U T E R C E N T E R

Circle 141 on reader service card

The RS Collection

UNCONDITIONAL LIFETIME MONEY BACK GUARANTEE!

GUARANTEED LOWEST PRICE!

BUSINESS/HOME

- ☐ **Tax '91 (2 disks) (3980)** - Prepare & print your 1991 federal taxes easily & quickly. Includes all schedules A-SE & tax tips! (HD)
- ☐ **Amortization Tables 3.51 (2 disks) (1160)** - All types!
- ☐ **Brother's Keeper 5.0 (4 disks) (3120)** - Excellent, full featured genealogy program that's easy to use. (HD)
- ☐ **Clip Art Utilities (DOS) (2 disks) (3340)** - Manage, view, & convert art clip art.
- ☐ **DanCad 3-D (5 disks) (2860)** - Superb, full-featured CAD that does it all! (CGA) (HD)
- ☐ **Express Check 4.04 (2 disks) (1110)** - A great program to manage your checking accounts! Even prints checks!
- ☐ **FormGen 4.1a/FormFill 1.5 (2 disks) (3240)** - A very versatile form generator and form filler. Create and/or fill out any kind of form for home or business on any printer. Includes numerous sample forms to get you started!
- ☐ **Home Inventory 4.0 (3137)** - Helps you keep track of everything you own. Great for insurance.
- ☐ **Home & Business Legal Guide 7.5 (3 disks) (3330)** - Over 150 legal forms for almost everything including contracts, wills and living trusts. (Valid in all 50 states) (HD)
- ☐ **Mealmaster 6.31 (2 disks) (3160)** - A complete recipe filer. Comes with over 1200 recipes to start you off. (HD)
- ☐ **Names & Dates 4.23 (2 disks) (3140)** - Great personal information manger! Keeps track of anything and everything.
- ☐ **Painless Accounting 5.0 (3 disks) (1120)** - Complete, easy to use accounting! Includes GL/ AR/AP, billing, and more (HD)
- ☐ **PrintPartner (2 disks) (3260)** - PrintMaster/PrintShop clone that prints banners, signs and more. Includes 200+ graphics.
- ☐ **Resume Creators (2 disks) (3270)** - Create a customized resume and find the job that is right for you.
- ☐ **Sports Card Collection** (2 disks) (3080) - Keep track of all your collectible cards!

EDUCATION

- ☐ **Algebra Tutor (3 disks) (1820)** - Learn Algebra easily! (CGA-HD)
- ☐ **Elementary Math Tutor (3 disks) (1620)** - Learn basic skills.
- ☐ **Lotus 2.2 Learning System (5 disks) (1480)** - Learn Lotus 2.2 easily and quickly. (An RS exclusive!) (HD)
- ☐ **Skyglobe 2.5/Earthwatch 1.2 (2 disks) (1880)** - Look at the stars or the earth. Shows constellations, planets, stars, and more. Fascinating program with great graphics. (CGA)
- ☐ **Spelling/Vocabulary Tutor (3 disks) (1870)** - Improve your spelling and vocabulary!
- ☐ **Typing Teacher (2 disks)(1440)** - Learn to type, or improve your typing speed with this set of programs.

(CGA) Color Graphic Adapter (EGA) EGA Graphics (HD) Hard Disk

GAMES

- ☐ **Best Arcade Games (2 disks) (1660)** - 18 of the best arcade games. (CGA)
- ☐ **CGA Tetris Collection (2 disks)(1970)** - Seven great variations of the popular game. (CGA)
- ☐ **Kids' Games (2317)** - Fun for the under 12 set.
- ☐ **Super Solitaire (2 disks) (2460)** - 15 great versions. (CGA)

EGA/VGA GAMES

Note: These games require EGA or VGA graphics.

- ☐ **Best EGA Games (4 disks) (1680)** - 15 of the best EGA games!
- ☐ **EGA/VGA Tetris Collection (3 disks) (1920)** - 9 high resolution variations including a couple of 3-dimensional ones!
- ☐ **EGA Mouse Solitaire (3 disks) (1930)** - Eight fabulous Solitaire card games that use a mouse.
- ☐ **Commander Keen Collection (3 disks) (2240)** - Two of the best games of all time! Great graphics & sound. Truly superb games. (HD)
- ☐ **Captain Comic 4 (1925)** - Great sound, graphics & more!
- ☐ **Duke Nuk'em (1965)** - A new game that's probably the finest arcade style game available on a PC! (HD)
- ☐ **Dark Ages (1928)** - From the creators of Commander Keen!

MISCELLANEOUS

- ☐ **Best DOS Utilities (4 disks) (3520)** - Essential utilities for DOS. File finders, and numerous other handy utilities that will save you time. Very easy to use.
- ☐ **Online Bible 5.0 (14 disks) (3170)** - Complete KJV Bible. Includes Greek/Hebrew Lexicon and Cross Reference. (HD)
- ☐ **Screen Savers for DOS (2 disks) (4790)** - A superb collection of screen blankers for DOS!
- ☐ **Vaccines and Virus Killers Ver. 85 (4 disks) (3510)** - Protect your system from viruses! This set will find (and destroy!) over 500 viruses and 900+ virus strains.

WORDPERFECT 5.0/5.1

- ☐ **By Design (4255)** - Unleash the true potential of WordPerfect 5.1! Turns WordPerfect into a design studio! (HD)
- ☐ **WordPerfect 5.0/5.1 Tools (3 disks) (3750)** - 17+ great utilities for WordPerfect 5.0/5.1.
- ☐ **WordPerfect 5.1 Learning System (4 disks) (4230)** - Learn how to use WordPerfect 5.1 easily and quickly with this great tutorial (WordPerfect 5.1 is NOT required.)
- ☐ **WordPerfect 5.1 Macros (2 disks) (4220)** - Over 100 helpful macros for WordPerfect 5.1.
- ☐ **PC-Draft II & III (3 disks) (3760)** - Create clip art & graphics for WordPerfect 5.0/5.1/ Windows. (CGA) (HD)

WINDOWS

Note: These disks require Windows 3.0 or 3.1

- ☐ **AtlUS for Windows (4126)** - A fun and educational atlas of the United States. You can even add your own entries!
- ☐ **Best Games for Windows (4 disks) (4860)** - 30+ games for Windows!
- ☐ **Chess for Windows (4639)** - Play the great game of chess.
- ☐ **Clip Art Utilities (Windows) (2 disks) (4890)** - Manage, view, & convert art.
- ☐ **The Complete Icon Collection (4 disks) (4580)** - Over 4000 of the best icons available!
- ☐ **Cursor/Hourglass Changers (4885)** - Change the cursor and hourglass into any shape you choose!
- ☐ **Grab Plus 6.2 for Windows (2 disks) (4570)** - Address and print out envelopes from within any Windows application.
- ☐ **Graphics & Gimmicks for Windows (4597)** - Great graphics & practical jokes for Windows!
- ☐ **Hyperdisk 4.21 (4539)** - Make Windows run 2 to 10 times faster! (Will also help other programs run faster.)
- ☐ **Icon Utilities (3 disks) (4260)** - A complete set of utilities to create, modify, view and manage icons.
- ☐ **Information Managers for Windows (3 disks) (4120)** - A collection of personal information managers, address & phone books, calendars, and reminders with alarms.
- ☐ **File Utilities for Windows (3 disks) (4110)** - Utilities for finding, deleting, moving, copying, searching and viewing files!
- ☐ **Menu Systems for Windows (4 disks) (4880)** - Makes Windows even easier to use.
- ☐ **Metz Utilities (2 disks) (4690)** - The utilities that received an Editor's Choice from PC Magazine!
- ☐ **Screen Savers for Windows (4615)** - Seven different screen savers for Windows.
- ☐ **Utilities for Windows (4 disks) (4510)** - 50+ utilities that will help you get the most out of Windows, as well as making Windows easier to use. A must for any Windows user!
- ☐ **Windows Editors & Notepads (3 disks) (4320)** - Two word processors and four text editors that are more powerful than Windows Write and Notepad.
- ☐ **Windows Drawing & Paint (2 disks) (4310)** - Three programs for most types of drawing including desktop publishing, CAD and object oriented drawing.
- ☐ **Windows Wallpaper 1 (4 disks) (4520)** - 75+ backgrounds.
- ☐ **WinSpell (2 disks) (4870)** - Spell checker for most Windows programs!
- ☐ **Word for Windows Macros (2 disks) (4930)** - The most complete collection of macros for Word for Windows!

Shareware programs require separate payment to the authors if found useful.

ATM FONTS FOR WINDOWS

Note: These fonts require Adobe Type Manager for Windows.

- ☐ ATM Fonts Vol.1 (4 disks) (4710) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.2 (4 disks) (4720) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.3 (4 disks) (4730) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.4 (4 disks) (4740) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.5 (4 disks) (4750) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.6 (4 disks) (4760) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.7 (4 disks) (4770) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.8 (4 disks) (4780) - 30+ fonts for ATM.

FREE catalog of over 300 programs with every order or by request.

ART SOLUTIONS CLIP ART PACKAGES

This is high quality original vector based clip art. Vector based art will not lose resolution or features when scaled in any way. The images are available in four formats: WPG (WordPerfect Graphics), EPS (Encapsulated Postscript), CGM (Computer Graphics Metafile), and PCX (PC-Paintbrush). These packages are available only through Reasonable Solutions and are backed by our lifetime unconditional money-back guarantee! Each volume contains 100 images per package, and are only $14.95 per package. Price includes full registration. (The price is the same for both 5¼ & 3½" disk sizes!)

Format:	*PCX*	*WPG*	*EPS*	*CGM*	*Format:*	*PCX*	*WPG*	*EPS*	*CGM*
Animals Vol. 1	☐27100-P	☐27100-W	☐27100-E	☐27100-C	Education Vol. 1	☐26100-P	☐26100-W	☐26100-E	☐26100-C
Animals Vol. 2	☐27200-P	☐27200-W	☐27200-E	☐27200-C	Education Vol. 2	☐26200-P	☐26200-W	☐26200-E	☐26200-C
Business Vol. 1	☐21100-P	☐21100-W	☐21100-E	☐21100-C	Headlines Vol. 1	☐24100-P	☐24100-W	☐24100-E	☐24100-C
Business Vol. 2	☐21200-P	☐21200-W	☐21200-E	☐21200-C	Headlines Vol. 2	☐24200-P	☐24200-W	☐24200-E	☐24200-C
Church Vol. 1	☐23100-P	☐23100-W	☐23100-E	☐23100-C	Misc. Vol. 1	☐25100-P	☐25100-W	☐25100-E	☐25100-C
Church Vol. 2	☐23200-P	☐23200-W	☐23200-E	☐23200-C	Misc. Vol. 2	☐25200-P	☐25200-W	☐25200-E	☐25200-C

Order Toll Free: 800-876-3475

Name _____

Business/Company (if applicable) _____

Address _____

City/State/Zip _____

Phone _____

All checks must be payable in US funds. We cannot accept Eurocheques.

Disk size: ☐ 5¼" ☐ 3½" (add 50¢ per disk if you require 3½")

No. Disks _____ x$ _____ =$ _____

Art Solutions Clip Art Packs _____ x$14.95 = $ _____

☑ Shipping $ 4.00

U.S. Only:
- ☐ Federal Express, Next Day (add $7) $ _____
- ☐ Federal Express, 2nd Day (add $5) $ _____
- ☐ COD (add $5) $ _____

☐ Canada (add $2) $ _____

☐ Foreign outside U.S./Canada (add $4) $ _____

TOTAL ORDER: $ _____

Method of Payment: ☐ Check/Money Order ☐ Visa/MasterCard ☐ COD (US Only)

Card No. _____ Exp. Date _____ Signature _____

Reasonable Solutions

PCW 4/92

2101 West Main, Medford, Oregon 97501
Toll free 800-876-3475, or 503-776-5777, Fax 503-773-7803

Circle 227 on reader service card

Arlington Computer Products... Great Prices and Service Since 1984!

- PC Magazine "...*Arlington offers worry-free mail order purchasing!*"
- PC Sources Product Review"...*You can be confident that what you order will work as soon as it arrives!*"
- PC Computing Phantom Shopper "...*Courteous service and terrific technical support!*"

HEWLETT-PACKARD

Laserjet III w/Toner	$1545
Laserjet IIP+ w/Toner	$829
Laserjet IIIP w/Toner	$1059
1MG Upgrade	$89
2MG Upgrade	$119
4MG Upgrade	$199
Extra Toners	$79
Deskjet 500	$409
Deskjet 500C	$759
Pacific Page/XL	$329/$699
Pacific Data 25 in 1 Font	$249
PacData Deskjet 25 in 1	$99

PANASONIC

1123	$199	1695	$369
1124I	$275	2624	$365
1180	$149	4410	$649
2180	$179	4430	$899
1624	$339	4450I	$1079
1654	$519	4455	$1719
4420/4450I	$149		

OKIDATA

ML320	$315	ML391	$599
ML321	$439	ML393	$919
ML380	$219	ML393C	$999
ML390	$439	PM3410	$1299
OLC400	$619		
OLC820	$1239		

ML-390

CANON

BJ-300	$449	BJ-330	$599
BJ-10EX	$319		

CITIZEN

GSX140+	$299	GSX200	$159
GSX145	$379	HSP500	$299

EPSON PRINTERS

LX810 $155	LQ200 $219	LQ870 $435	LQ2550 $849	DFX5000 $1269
FX850 $289	LQ570 $255	LQ1070 $349	EPL7500 $1899	DFX8000 $2139
FX1050 $395	LQ860 $549	LQ1170 $575	EPL8000 $1329	Action LaserII $679

Accessories for Epson Printers and Lasers in Stock!

NOTEBOOKS

Arlington 386 SX20, 60 MG, VGA	$1799
AST 63V, 386, 60 MG	$2049
Epson NB3S, 40 MG	$2199
Goldstar 620, 386SX20, 40 MG	$2099
Panasonic CF270, 16 MHz, 20MG, VGA	$1559
Panasonic CF270, 16 MHz, 60 MG, VGA	$1799
Panasonic CF370H6 386SX-20, 60MG, VGA	$2499

TEXAS INST.

TM 2000/20 MG	$969
TM 2000/40 MG	$1199
TM 3000/40 MG	$1899
TM 3000/60 MG	$2249
TM 3000/WINSX 60	$2559
TM 3000/WINSX 80	$2895
LASER STD	$879
LASER PS17	$1199
LASER PS35	$1499

SOFTWARE

Aldus Pagemaker	$489
Corel Draw	$369
Harvard Graphics 3.0	$389
Lotus 123 2.2/3.1	$329/$389
Microsoft Mouse	$89
Microsoft Excel	$299
Microsoft Windows 3.0	$79
Microsoft DOS 5.0	$79
Ventura Desktop Publ.	$499
Word Perfect 5.1	$245

SCAN. & DIGIT.

Epson ES300C	$999
Kurta XLP	$249
Logitech ScanMan	$159
Panasonic FXRS 3070U	$769
Summasketch 12×12	$295
Summasketch 12×18	$539

MULTIFUNCTION BOARDS

AST 6 Pack w/384K	$159
Irma Board III	$399
AST 5251-II Plus	$449
Sound Blaster PROF	$189

intel

Intel Above Board+	$269
Intel Plus 8 w/2 MG	$389
Intel 386 PC w/1 MG	$459
Intel Satisfaxtion	$359
Intel Scanner Option	$199
Intel Snap-In 386	$359

DRIVES & TAPES

Ext. 1.2 for PSII	$159
Toshiba 3½" 720K	$69
Toshiba 3½" 1.44	$69
Colorado Jumbo 120	$209
Colorado Jumbo 250	$269
Everex 40 MB Tape	$209
NEC CDR-73	$579

SEAGATE HARD DISKS

48 MB 3½ (157N-Kit)	$259
40 MB (157A)	$169
40 MB for AT (ST251-1)	$239
80 MB for AT (4096)	$399
80 MG 296 Kit	$299
89 MG 3096	$279
106 MG 3120A	$369
120 MG 3144A	$379
211 MG 1239	$569

IOMEGA

90 MB Int. w/boot card	$979
90 MB Ext. w/boot card	$999

PLUS

Hard Card 40 MB	$549
Hard Card 50 XL	$299
Hard Card 80 MB	$419
Hard Card 105 MB	$449

CONNOR HARD DRIVES

40 MB	$199
120 MB	$359
200 MB	$589

MODEMS

Dove Fax Modem DOS	$179
Dove Fax Windows	$209
Hayes Pocket 2400	$119
Hayes 2400 Ext.	$299
Hayes Optima 96	$379
Hayes Ultra 96	$599
Hayes Ultra 96 14.4	$759
Intel 2400	$139
Intel 2400 Ext.	$159
Intel 2400 Ext. MNP	$209
Intel 9600 Ext.	$439
Intel 9600 14.4 Ext.	$479
Mghtz 2400 Tosh/CPQ	$129
Practical Per. 9600	$409
Everex 2400	$79
Everex 2400 External	$169
US Robotics 9600	$569
US Robotics Dual Std	$779

CHIPS

256K/1 MG Chips	each $3/$6
256 × 4 Chips	$6
256K/1MB Simms	$15/$49
4MB Simms	$159
Compaq 386 4 MB	$239
Compaq SLT 2 MB	$239
Compaq LTE 2MB	$159
Compaq LTE 386 4MB	$349
HP 2MG Upgrade	$119
IBM 2-8 MG Board	$279
IBM 70 & 80 2 MB	$119
IBM 70 & 80 4 MB	$219
OKI Laser 2MB	$149

intel

Intel 8087-2	$109
80287-10XL/XLT	$89
80387-16	$195
80387 SX-16	$129
80387 SX-20	$135
80387-20/25/33	$195
80487 SX	$449

NETWORKING

Netware 2.2 5 User	$499
Netware 2.2 10 User	$1099
Netware 2.2 50 User	$1999
Lantastic 10BPS Starter	$469
E143 Ethernet	$209
NE1000 Ethernet	$139
NE2000	$159
Ethercard +/+16	$139/$165
EtherLink II 3 Com	$185
IBM Token Ring	$599

VIDEO BOARDS

ATI VGA Wonder XL	$179
ATI VGA Wonder 512	$199
ATI 8514 1MG	$419
ATI Graph Ultra 1MG	$499
Boca Super VGA	$129
1024 VGA 16 Bit	$79
NEC Grph Engine 256	$849
Orchid Pro II 1MG	$269
Orchid Farenheit 1MG	$329
Paradise VGA 1024	$139
Paradise +16	$129

MONITORS

MITSUBISHI

EGA	$249
VGA XC1429	$379
Diamond Scan	$489
HL6615 16"	$969
HL6945 20"	$1789

NEC

3 FGX/4 FGX	$639/$749
5 FGX	$1349
Multisync VD	$1999

PANASONIC

1381 VGA 1024×768	$329
1395 VGA 1024×768	$439
1991 VGA 1280×1024	$1559

GOLDSTAR

EGA/VGA 1425+	$249/$249
VGA 1460	$299
VGA 1620+	$689

Arlington Computer Products, inc.

Prices and availability subject to change without notice. Purchase orders accepted from Qualified Customers.

HOURS C.S.T.
7:30 - 6:30 pm - Mon.-Fri.
9:00 - 1:00 pm - Saturday

1970 CARBOY
MT. PROSPECT, IL 60056

FOR ORDERS & QUOTES: **800-548-5105**

CUSTOMER SERVICE AND IN ILLINOIS 708-228-6333
SHIPPING 708-228-9748
TECHNICAL ASSISTANCE 708-228-1470
We Export! FAX 708-228-0516
No surcharge for Charge Cards.

REPLACE YOUR CASH REGISTER!

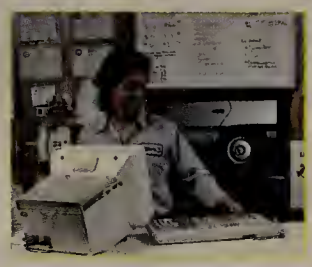
Business Solutions for Retail Stores, Liquor Stores, Video Stores, Hair & Nail Salons, Auto Repair Shops, Rental Stores and more!

MicroBiz solutions start at $179.95. Biz Bear included.

Dealer Inquiries Welcome 1-800-637-8268

MicroBiz offers a complete one-stop solution to computerizing your business, with twice as many features at half the price. ★ Computerize any retail store, auto repair shop, video store, hair & nail salon or liquor store. ★ **MicroBiz** offers a complete solution including software, cash drawers, bar code readers, receipt printers and everything else you need to computerize your business. ★ All **MicroBiz** products work on any IBM PC or compatible with 640K RAM and 40 megs of hard drive space (your computer or ours!!!).

- automatic credit card authorization
- bar code compatibility
- color/size matrix
- multiple pricing levels
- track inventory by size/color/style
- mailing labels
- track customer history
- daily closeout reports
- accepts split tender
- view in-stock status
- pull down menus
- pop-up windows
- 99 levels of password protection
- tracks promotional sales
- prints bar code labels
- reorder reports
- extensive sales reports
- item/invoice discounts
- tracks sales by employees
- set limited-time promos
- links to One-Write Plus
- receiving reports
- pop-up calculator
- built-in word processor
- works on any IBM PC or compatible with hard disk drive
- Multiuser and source code available
- dBase compatible compiled with Clipper...



Auto Repair Shop Controller

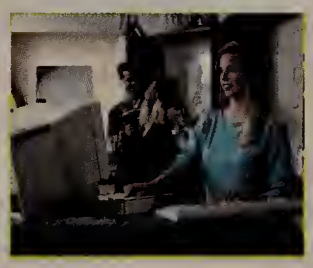
★ Maximize inventory, track detailed service history, guarantee repeat business, reduce billing errors, improve cash flow, schedule appointments and produce reports for smarter business decisions directly.

Video Store Controller

★ This "beginner-proof" video retail management system is flexible enough to work in any location. Scan a bar code or key in video membership information. Financial and rental information is always up to the minute.

Liquor Store Controller

★ Multi User for two or more stations. Used by thousands of growing liquor stores and chains nationwide. Monitor every sale, reduce theft, increase profits and meet the needs of your customers.



Hair & Nail Salon Controller

★ Imagine a computerized system that keeps in touch with your clients, sending out birthday cards, perm and color reminder letters, customer "thank you" notes...plus keeps complete financial control of your business!

CO/Session Host FREE

★ Access files and programs on your office PC from home. CO/Session is fast, powerful and designed for the businessperson on the go. Use with a modem, and our support staff can see and operate your computer directly.

Unlimited Computers (S. Florida) 305-923-7937 • Computer Terminal (Canada) 416-372-3005 • Armstrong and Assoc. (New Zealand) 011-647-8340 275
Computer Trends (Wisconsin) 414-435-8088 • RDN & Associates (Buffalo) 1-800-373-0747 • ABS Business Systems (N. New Jersey) 914-352-1215 • Desktop Data (Texas) 713-270-4288

MICROBIZ

MicroBiz
500 Airport Executive Park
Spring Valley, NY 10977
Ph: (914)425-9500 Fx:(914)425-4598

IBM Business Partner
Overnight Software Delivery

1-800-637-8268

MicroBiz...programming your business for success.

Circle 168 on reader service card

THE HOME OFFICE

The practical guide to home/office computing

by Steve Bass

Are you sitting at your desk in your office, wondering whether you'll lose both tomorrow—to a leveraged buyout, perhaps, or just the continued malaise of the U.S. economy?

Not a pleasant thought, but let's be realistic. While your nameplate is still on the door, you need to find out how long you could survive a personal economic catastrophe.

To get the answer, you need to know what your financial status is today. And there are a number of personal finance programs that can help.

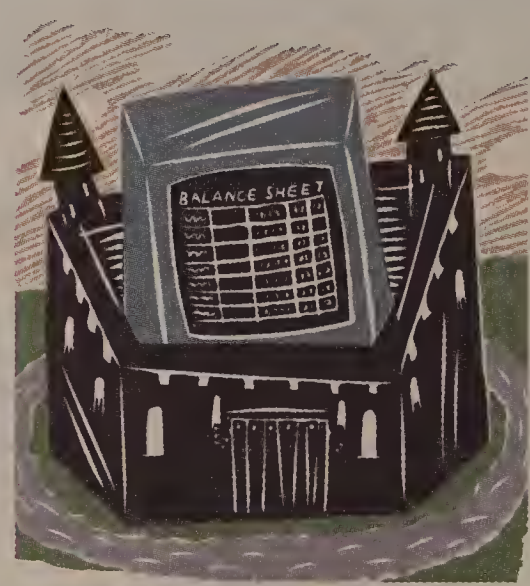
If you've been using *Quicken* or *Managing Your Money* to pay your bills and manage your bank and credit accounts, you're already halfway there. You have a logical, easily accessible record of your personal payables and receivables.

If not, get one of these programs and start entering the numbers, posthaste. With tax deadlines approaching, you'll have to assemble most of this information anyway.

I use *Quicken*—primarily a checkbook program—because it's designed with plenty of data entry shortcuts and thorough but easily accessible reports like an instant budget. *MYM,* a good alternative, lets me do still more. With *MYM,* I not only can enter checks but can also balance my assets—insurance, IRA, Keoghs, and other investments—against my enormous home mortgage, outstanding loans,and other liabilities.

MYM also has sophisticated analysis and reporting capabilities. But if, like me, you already have invested time in *Quicken,* stay with it and simply import your data into *MYM* or *WealthStarter.*

Once the numbers are in, you have to look at yourself as a business would and generate the two financial documents that, more than any others, show a business where it stands: a balance sheet and an income statement. A personal



BUD PEEN

balance sheet is a snapshot of your assets and liabilities at a specific point in time. An income statement details just your income and outgo for a certain period—a month, a quarter, a year.

You could accomplish this using a spreadsheet—entering your checks, developing the simple arithmetic formulas—but hey, why reinvent the wheel? Both *Quicken* and *MYM* offer dozens of ways to cut the pie, making it easy to take that snapshot of your assets. Then print your income statement, a report that measures just your income—salaries, rents, dividends, whatever—against how much you spend on groceries, rent, and other essentials.

Armed with these documents, you can then start to "what if?" and create different budgetary scenarios to determine what your expenses should be for different levels of income. In a sense, this is your own personal business plan.

If you get laid off, you'll need at least six months worth of income and a strategy for holding onto as much as you can for as long as you can. Inevitably, that means cutting expenses.

I'm self-employed, which has its own financial ups and downs, especially in these recessionary times. Still, I've been able to fine-tune my budget, and *WealthStarter* even helped me set some *attainable* financial goals. Unfortunately, that means giving up my plan for a friendly takeover of Microsoft, but it does include putting something away for a comfortable retirement.

The recession is real, and although you can't stop it, with the help of your desktop computer, now you can have a say in your own financial destiny.

Contributing Editor Steve Bass is a family therapist and president of Pasadena IBM Users Group. He can be reached on PC World Online (see page 8 for more information).

WHERE TO BUY

Andrew Tobias' Managing Your Money $179, Meca Software Inc., 800/228-6322
Reader service no. 633
Quicken 5.0 for DOS $69.95, Intuit Inc., 415/322-0573, 415/322-2800
Reader service no. 634
WealthStarter $59.95, Reality Technologies, Ltd., 800/346-2024
Reader service no. 635

ANTHONY RUSSO

TAKE OR YOU MIGHT GET TAKEN.

Take our advice and send in this reply card. You'll get a catalog chock-full of information about our computers, service and support.

And you'll quickly see why Dell has become an over half billion dollar business in just seven years. Why we won over 53 product awards last year. And why two-thirds of the FORTUNE 500® will be Dell customers for years to come.

All because at Dell, no customer is taken lightly.

TO ORDER, CALL. PLEASE REFERENCE #11D69.

800-873-1130

HOURS: 7AM-9PM CT M-F 8AM-4PM CT SAT 10AM-3PM CT SUN

IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.

DELL COMPUTER CORPORATION

FORTUNE 500 is a registered trademark of The Time Inc. Magazine Company. ©1992 Dell Computer Corporation. All rights reserved.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 6245 AUSTIN, TEXAS

POSTAGE WILL BE PAID BY ADDRESSEE

DELL COMPUTER CORPORATION
DEPT DH
9505 ARBORETUM BLVD
AUSTIN TX 78759-9860

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

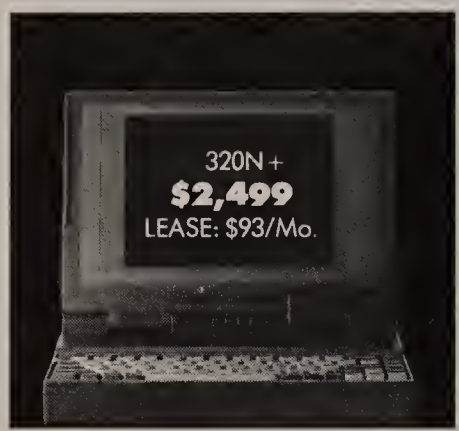
BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 6245 AUSTIN, TEXAS

POSTAGE WILL BE PAID BY ADDRESSEE

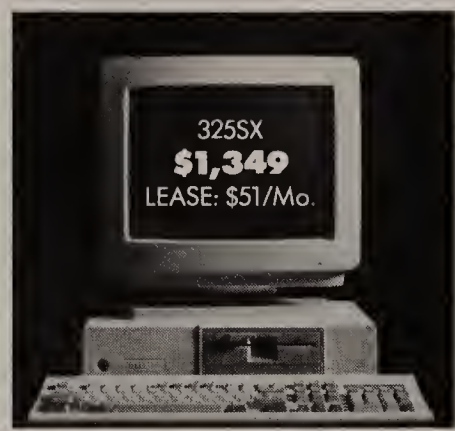
DELL COMPUTER CORPORATION
DEPT DH
9505 ARBORETUM BLVD
AUSTIN TX 78759-9860

IF THESE MAKE A GOOD IMPRESSION, WAIT TILL YOU MEET THE REST OF THE FAMILY.



Dell 320N + 20 MHz i386SX System.
System includes:

- 4 MB RAM
- 60 MB hard drive
- VGA Edgelit LCD
- 4 hour battery life on NiMH battery
- 6.8 lbs.
- 8½ x 11" footprint
- Full-travel keyboard

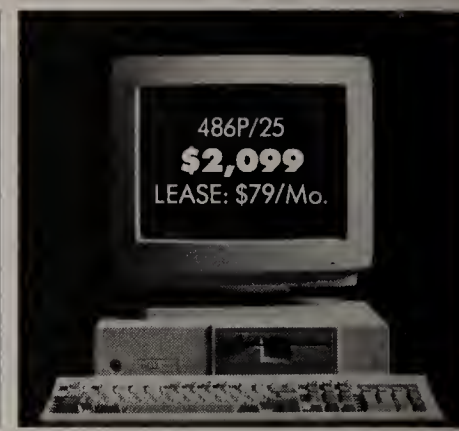


Dell 325SX 25 MHz i386SX System.
System includes:

- 2 MB RAM
- 50 MB hard drive
- VGA Color Monitor
- 1024 x 768 integrated video support
- Expandable to 8 MB RAM
- 3 16-bit expansion slots
- 1 floppy drive

Dell 486P/16 16 MHz i486SX System.
System includes:

- 2 MB RAM
- 50 MB hard drive
- VGA Color Monitor
- Upgradeable processor design
- 1024 x 768 integrated video support
- RAM expansion to 64 MB
- 1 floppy drive



Dell 486P/25 25 MHz i486 System.
System includes:

- 2 MB RAM
- 50 MB hard drive
- VGA Color Monitor
- Upgradeable processor design
- 1024 x 768 integrated video support
- RAM expansion to 64 MB
- 1 floppy drive

Send for the brand new Dell product catalog, loaded with information on all our award-winning computers, service and support. Plus, get the details on our newest PCs, notebooks and servers. Return this card today, or call us at (800) 873-1130. In Canada, call (800) 668-3021. In Mexico, call 95-800-010-0664.

☐ Please have a Dell representative call me.

Name: (M) _____ (Please Print)
Title: _____
Company: _____ (If applicable)
Address: _____
City: _____ State: _____ Zip: _____
Type of Business: _____
Approx. # of employees in company: _____
Installed # of PCs in your company: _____
Home Phone: (_____) _____
Business Phone: (_____) _____
Fax Number: (_____) _____

1. Which products are you most interested in, and how many do you plan to purchase in the next 12 months?

Timeframe	i486	i486SX	i386	i386SX	Notebook	Other
Less than 1 month						
1-3 months						
3-6 months						
6-12 months						
More than 12 months						

2. If you resell, please identify your primary customers:
☐ Education ☐ General Business ☐ Government ☐ Medical

3. By which method do you acquire PCs?
☐ Mfg rep calls on me directly ☐ Local retailer
☐ VAR/Integrator ☐ Mail order/direct

4. From whom do you currently purchase PCs? _____

5. Are you interested in leasing? ( ) Yes ( ) No

AD CODE 51D69

TO ORDER, CALL. PLEASE REFERENCE #11D69.

800-873-1130

HOURS: 7AM-9PM CT M-F 8AM-4PM CT SAT 10AM-3PM CT SUN

IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.

DELL COMPUTER CORPORATION

Send for the brand new Dell product catalog, loaded with information on all our award-winning computers, service and support. Plus, get the details on our newest PCs, notebooks and servers. Return this card today, or call us at (800) 873-1130. In Canada, call (800) 668-3021. In Mexico, call 95-800-010-0664.

☐ Please have a Dell representative call me.

Name: (M) _____ (Please Print)
Title: _____
Company: _____ (If applicable)
Address: _____
City: _____ State: _____ Zip: _____
Type of Business: _____
Approx. # of employees in company: _____
Installed # of PCs in your company: _____
Home Phone: (_____) _____
Business Phone: (_____) _____
Fax Number: (_____) _____

1. Which products are you most interested in, and how many do you plan to purchase in the next 12 months?

Timeframe	i486	i486SX	i386	i386SX	Notebook	Other
Less than 1 month						
1-3 months						
3-6 months						
6-12 months						
More than 12 months						

2. If you resell, please identify your primary customers:
☐ Education ☐ General Business ☐ Government ☐ Medical

3. By which method do you acquire PCs?
☐ Mfg rep calls on me directly ☐ Local retailer
☐ VAR/Integrator ☐ Mail order/direct

4. From whom do you currently purchase PCs? _____

5. Are you interested in leasing? ( ) Yes ( ) No

AD CODE 51D69

TO ORDER, CALL. PLEASE REFERENCE #11D69.

800-873-1130

HOURS: 7AM-9PM CT M-F 8AM-4PM CT SAT 10AM-3PM CT SUN

IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.

DELL COMPUTER CORPORATION

WE COULD CHALLENGE THE COMPETITION TO MATCH OUR NEW 4 HOUR ON-SITE SERVICE, BUT THEY WOULDN'T SHOW UP UNTIL TOMORROW.

Call for emergency computer service from the other guys and what do you get? Often, an agonizing wait, watching your business slowly grind to a halt.

Which is why Dell is introducing Critical Care℠ service in 17 major metropolitan areas. Beginning March 30, if you have a mission-critical problem, you'll be able to get a technician on-site in no more than 4 hours.△

And not just some guy with a set of screwdrivers. We're talking about a full-fledged Novell-certified field engineer trained on every Dell system.

When he arrives, he will have been briefed on your problem. Given a history of your system. And equipped from a multi-million dollar parts inventory.

In short, a computer commando.

But the best part about Critical Care is that you'll probably never have to use it.

Our award-winning technical hotlines solve 90% of problems reported over the phone, usually in 10 minutes or less.

So call us and ask for more details about Critical Care. Or call the other guys and ask about their emergency service. They'll get back to you.

Eventually.

800-232-5610

TO ORDER, CALL. PLEASE REFERENCE 11D67.
HOURS: 7AM-9PM CT MON-FRI, 9AM-4PM CT SAT, 10AM-3PM CT SUN
IN CANADA, CALL 800-668-3021. IN MEXICO, 95-800-010-0664.

△Same-day 4-hour on-site service available provided that Dell initiates service dispatch by 2pm CT. 4-hour service contract must be purchased. Critical Care is a service mark of Dell Computer Corporation.

SOME MORE LOW BLOWS TO THE COMPETITION.

Here's news that's going to make a lot of computer manufacturers wince. We've dramatically reduced the prices of our entire range of Dell systems. So now you can buy one of the best computers on the market without knocking out your budget.

And while other companies' standards often go down along with their prices, we'll still give you the service and support package described by *PC Week's* editors as "overkill." Our toll-free technical hotlines solve 90% of reported problems over the phone, usually in 10 minutes or less. Our TechFax℠ line offers system information 24 hours a day. And if needed, a trained technician can be at your desk-side with a solution in hand, usually by the next business day.△

Perhaps this is why Dell comes so highly recommended. After all, we've won *PC Week's* Corporate Satisfaction Poll for PCs, portables and servers an unprecedented eight times.

So call us and find out why over two-thirds of the FORTUNE 500® now use Dell computers. But don't bother talking to our competitors; they're a little short of breath.

We just took the wind out of their sales.

DELL COMPUTER CORPORATION

800-232-5613

TO ORDER, CALL. PLEASE REFERENCE 11D68.
HOURS: 7AM-9PM CT MON-FRI, 9AM-4PM CT SAT, 10AM-3PM CT SUN
IN CANADA, CALL 800-668-3021. IN MEXICO, 95-800-010-0664.

LOWERED BY $300

NX20 from Dell 20 MHz i386™SX System
System includes
2 MB RAM, 40 MB Hard Drive, VGA LCD

- 60 MB Hard Drive also available
- 8.3 x 11" footprint
- 6.8 lbs.
- 2-3 hour battery life
- CCFT edgelit triple supertwist display
- 32 Gray levels
- Full size keys with 3mm travel
- Modem, memory and coprocessor options
- One year return to factory service

LOWERED BY $300

Dell 486P®/20 20 MHz i486™SX System
System includes
4 MB RAM, 80 MB Hard Drive,
UltroScon™ 14C Color Monitor

- Upgradeable processor design
- Up to 40% faster performance than 386DX systems
- Keyboard Password Protection
- RAM expansion to 64 MB
- 1024 x 768 non-interlaced monitor with 70 Hz refresh rate for flicker free operation
- 1 floppy drive

LOWERED BY $800

Dell 486P/33 33 MHz i486 System
System includes
4 MB RAM, 100 MB Hard Drive,
UltroScon 14C Color Monitor

- Upgradeable processor design
- Programmable Flash EPROM for easy BIOS upgradeability
- Expands to 64 MB RAM using 32-bit SIMMs with gold-plated connectors
- 1024 x 768 non-interlaced monitor with 70 Hz refresh rate for flicker free operation
- 1 floppy drive

LOWERED BY $1,000

Dell 486D/33 33 MHz i486 System
System includes
4 MB RAM, 230 MB Hard Drive,
UltraScon 14C Color Monitor

- 5 storage bays, 6 16-bit slots
- 8 KB internal cache
- RAM expands to 64 MB using 32-bit SIMMs with gold-plated connectors
- 1024 x 768 non-interlaced monitor with 70 Hz refresh rate for flicker free operation
- 1 floppy drive

INTRODUCING

Dell 325SX 25 MHz i386SX System
System includes
2 MB RAM, 50 MB Hard Drive,
VGA Color Monitor

- 1024 x 768 integrated video support
- Novell certified
- Expandable to 8 MB RAM
- 3 16-bit expansion slots
- Keyboard Password Protection
- 1 floppy drive

INTRODUCING

Dell 486D/16 16 MHz i486SX System
System includes
2 MB RAM, 50 MB Hard Drive,
VGA Color Monitor,

- Upgradeable processor design
- Programmable Flash EPROM for easy BIOS upgradeability
- RAM expands to 64 MB using 32-bit SIMMs with gold-plated connectors
- SmartVu™ Diagnostic Display
- Can support 5 storage devices
- 6 16-bit expansion slots
- 1 floppy drive

intel inside

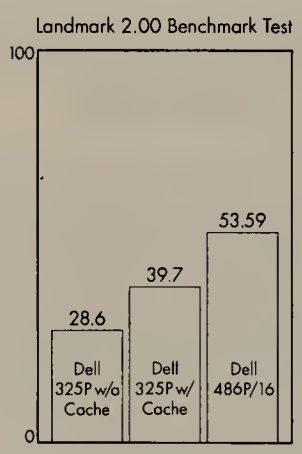
All prices and specifications are subject to change without notice. **Payment based on 36-month, open-end lease. △Leasing arranged by Leasing Group, Inc. In Canada and Mexico, configurations and prices may vary. Dell is a registered trademark, UltraScan and SmartVu are trademarks, and TechFax is a service mark of Dell Computer Corporation. i386, i486 and the Intel Inside Logo are trademarks of Intel Corporation. FORTUNE 500 is a registered trademark of The Time Inc. Magazine Company. Dell disclaims proprietary interest in the marks and names of others. ◇Service provided by BancTec Service Corp. On-site service may not be available in certain remote locations and is not available with NX20. Shipping and handling and applicable sales tax not included in the price. ©1992 Dell Computer Corporation. All rights reserved.

AFTER YOU PUT YOUR JAW BACK IN ITS PLACE, CALL US.

You'll find the Dell® 486P/16 as surprising as our competitors find it shocking.

It delivers full-fledged i486™SX performance at the price of an i386™DX machine; up to 40% more processing power at virtually no additional cost.

And that's just for starters. Because the 16 MHz i486SX processor easily upgrades all the way up to a high-end 33 MHz i486DX system, and even beyond.



In other words, this is a computer that comes with the future built in. Along with some Dell technical innovations you'll be amazed to get at a price like this.

Features like programmable Flash EPROMs, for example, that make BIOS upgrading a matter of slipping in a diskette. 32-bit SIMMs with gold-plated connectors for greater reliability. And built-in 1024 x 768 video support for high resolution graphics.

All this, starting at an unbelievable $1,749 for a complete system.

intel inside™

So when you've finished staring at this page, call and ask about the support that comes along with the Dell 486P/16. And be prepared to be speechless again.

$1,749 (Lease◊: $66/Month**)
Dell 486P/16 16 MHz i486SX System
System includes 50 MB Hard Drive, VGA Color Monitor, 2 MB RAM and 1 Floppy Drive

800-232-2033

TO ORDER, CALL. PLEASE REFERENCE 11DD2
HOURS: 7AM-9PM CT MON-FRI, 9AM-4PM CT SAT, 10AM-3PM CT SUN
IN CANADA, CALL 800-668-3021. IN MEXICO, 95-800-010-0664

Circle 74 on reader service card